Six-Roll, Cluster-Type Cold Mill

Affords Heavy Reduction

Recent Development of New Rolling Unit Makes Possible the Elimination of Numerous Steps in Commercial Methods of Manufacturing High-Grade Sheets—Description of Mill and Sheetmaking Processes

By John D. Knox

SHEET mill practice has undergone little change since its establishment in this country Large motors for driving the hot mills have gained wide recognition, continuous-type pair furnaces have been employed for heating the sheet bars, jobbing mills have been equipped with motor-driven screwdowns and hot mills arranged and driven in groups of four mills, but for the most part the practice remains the same. The recent development, however, of what is known as the cluster-type mill opens up the possibility of altering present methods used in the manufacture of sheets.

Under the standard commercial methods of producing high-grade sheets for automobile and metal furniture, the ingots first are rolled into sheet bars which are cut in lengths corresponding to the widths of the sheets to be produced. When the sheet bars have been heated to the proper temperature, they are withdrawn in pairs and rolled on the roughing mill to within about 60 per cent of the length called for in the specification. This is known as the breakdown, and when completed, the partially rolled sheets are transferred to the pickling department.

Because of the smooth surface required by consumers of automobile, metal furniture and other specialty sheets, it is highly beneficial at this stage of reduction to remove any scale or dirt. The sheets not only are rendered smoother when finished off, but the time required to pickle the steel between the annealing and cold rolling

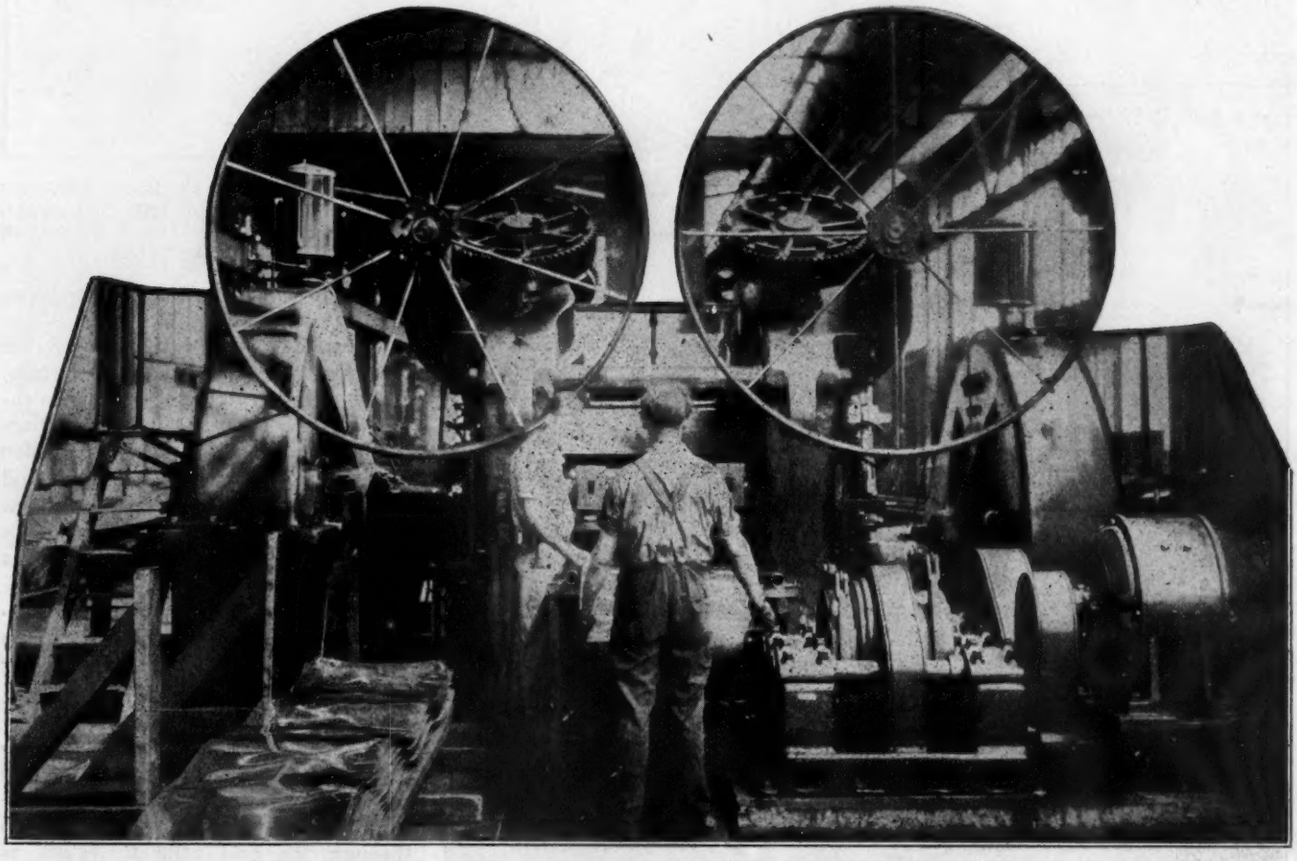

FIG. 1—REAR SIDE OF CLUSTER-TYPE MILL WHICH IS DESIGNED TO COLD ROLL SHEETS UP TO 60 INCHES WIDE AND STRIP STEEL TO ANY PRACTICAL WIDTH

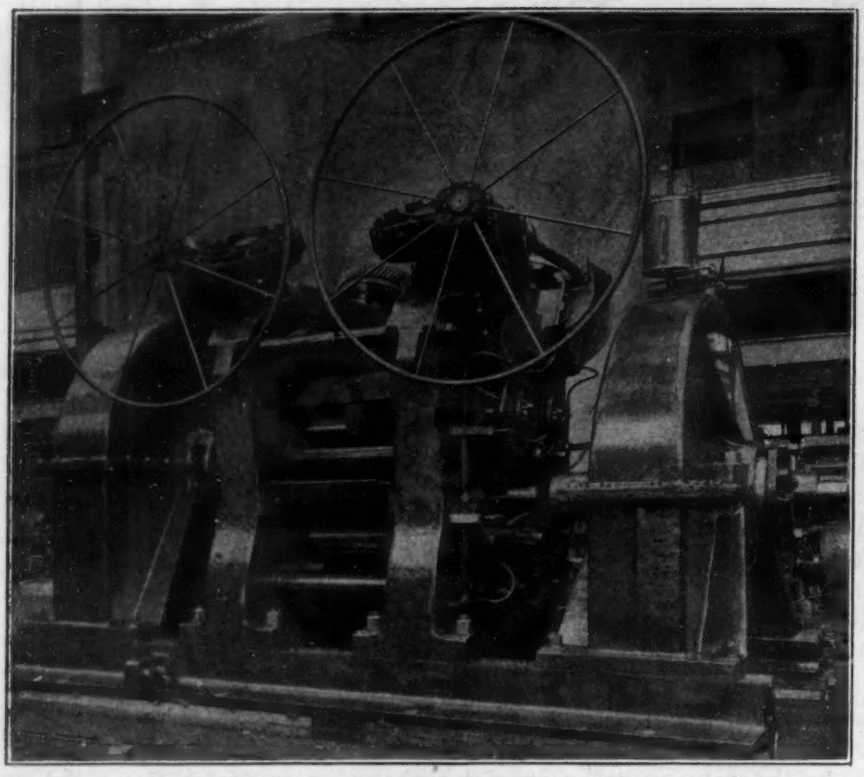

FIG. 2—INDIVIDUAL GEAR REDUCTION SETS ARE PROVIDED FOR THE WORKING ROLLS

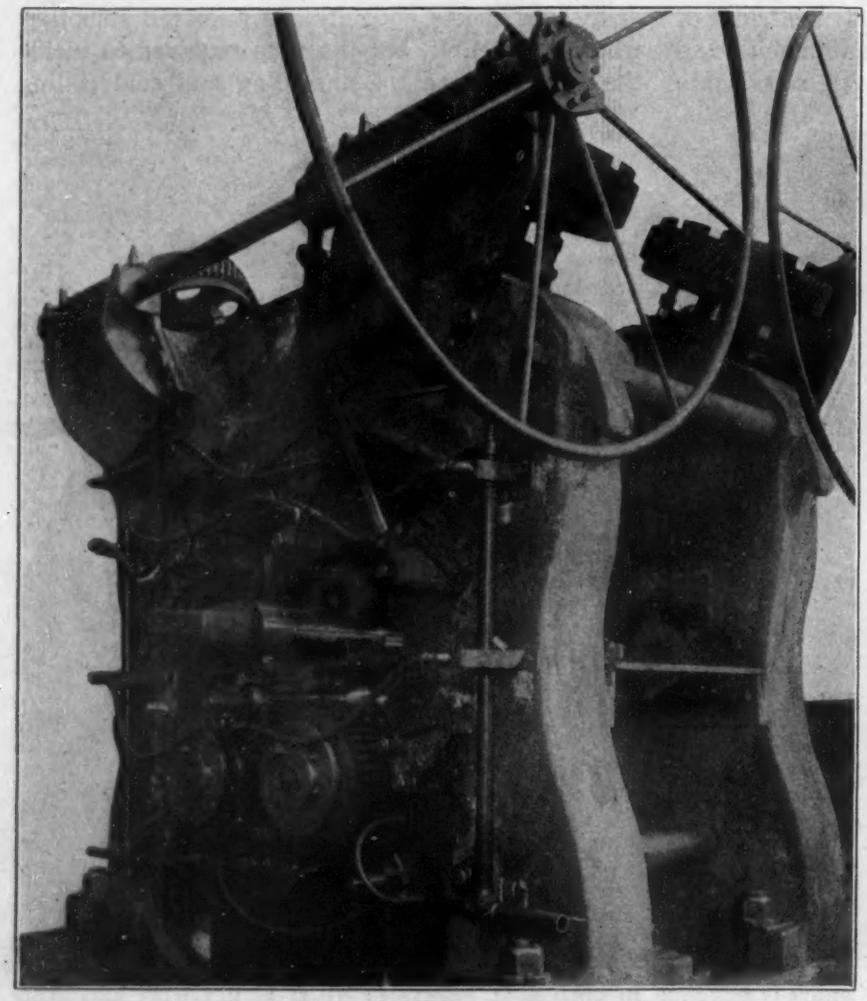

FIG. 3—SIDE OF MILL SHOWING THE METHOD EMPLOYED FOR WATER COOLING THE ROLLS AND BEARINGS

processes, is shortened. After these sheets are agitated up and down in acid and properly washed, they are returned to the hot mills and matched in packs of threes. Each middle sheet is dipped in a solution of charcoal and water maintained at a suitable temperature by steam and then is replaced in its pack. The fine particles of charcoal prevent the sheets becoming welded together when the pack is being finished off.

After the sheets are matched, they are returned to the sheet furnace for reheating and finally are rolled to the desired length and gage. In finishing off, the number of sheets rolled in one pack and the number of times heated are determined by the required gage and length of these sheets; the desired length and gage produced in the hot mill, is approximately the final length and gage of the finished sheet.

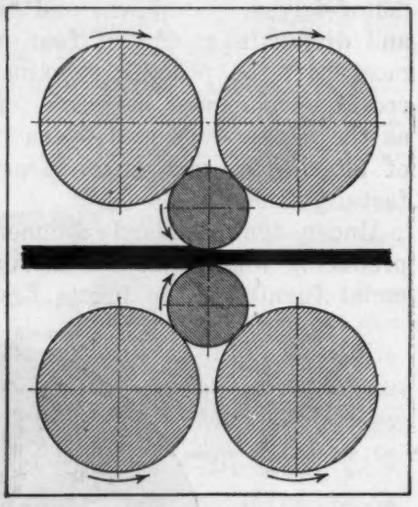

FIG. 4—SCHEMATIC DIAGRAM SHOWING THE ARRANGEMENT OF THE TWO SMALL WORKING ROLLS AND THE FOUR LARGE BACKING-UP ROLLS

If the sheets do not leave the hot mill with a highly smooth surface, no amount of processing in the finishing department will impart this particular quality. Every precaution is taken to keep the rolls smooth and the sheets free of scale and foreign material that is likely to cause them to be rejected or to be classified as second grade.

To obtain the surface finish necessary to meet the requirement of the automotive and metal furniture trades, the hot-rolled sheets are sheared and annealed at a normalizing temperature to obtain a uniform grain structure. The sheets then are pickled to remove the oxide developed in the annealing process. After two passes through the cold rolls the stock is reannealed. This reannealing is to remove the large grains so that on

forming, the surface structure will be uniform with the interior structure. Following the reannealing process, the sheets either are given two passes through the cold rolls or one pass through the cold rolls and two passes through the roller leveler.

In the regular commerical process of manufacturing high-grade sheets, therefore, 13 steps are involved. These are:

1—Bars heated.
2—Roughed to 60 per cent of finished length.
3—Pickled.
4—Dipped in charcoal solution.
5—Matched in threes.
6—Heated.
7—Hot rolled.
8—Sheared.

of chilled iron and are 24 inches in diameter. The lower backing up rolls are adjusted for alignment by inserting wedges beneath the bearings as shown in Fig. 3. The top rolls are adjusted for alignment by screws which are placed at an angle so that their center line will coincide with the angle of pressure on the rolls.

How Screwdowns Operate

The screws are operated by a special screwdown arrangement which permits the operator to adjust the rolls under any condition. A spiral is keyed to the common shaft of the screwdown arrangement at such a distance from the end of the shaft that its arm fits into the slot of the hub. Considerable play is permitted within the slot so that as the operator backs off on the wheel and then turns it in the opposite direction the upper part of the slot strikes the dog with a hammer blow. By this arrangement the operator can adjust the rolls, if he so desires, while steel is passing between .

The working rolls are 12 inches in diameter and are made of hardened steel. Instead of driving the rolls

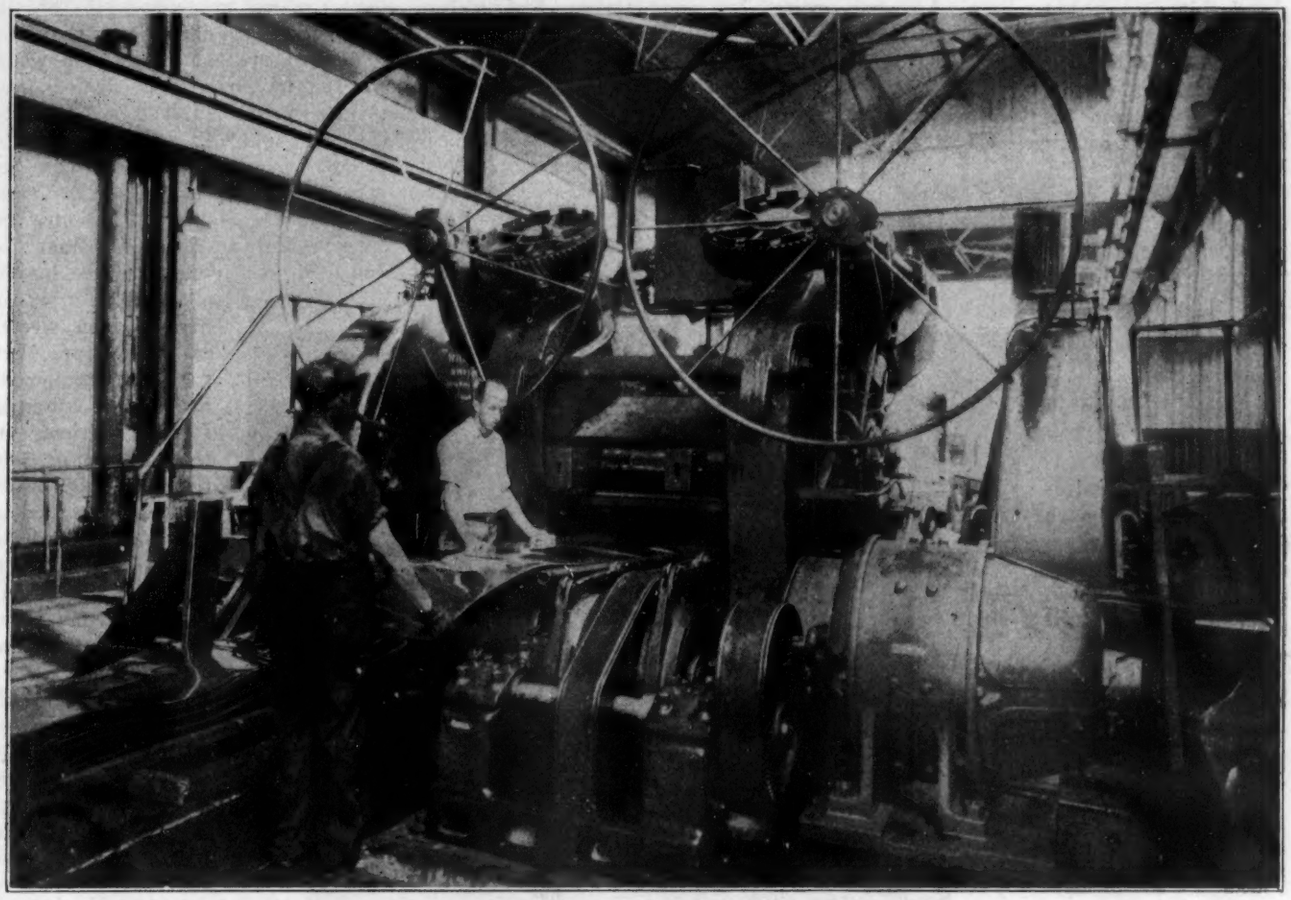

FIG. 5—REAR OF MILL SHOWING THE SCREWDOWN ARRANGEMENT AND THE 350-HORSEPOWER MOTOR AND GEAR REDUCTION SETS FOR DRIVING THE TWO WORKING ROLLS

9—Annealed.
10—Pickled.
11—Two-pass cold rolled.
12—Reannealed.
13—Two-pass cold rolled or one-pass cold rolled and two-pass roller leveled.

By the use of the cluster-type mill, however, the number of steps involved in the process of sheet manufacture may be reduced. The mill was designated as the cluster mill because of the arrangement of the rolls; as shown in the schematic diagram in Fig. 4, six rolls are employed. The two top and two bottom rolls are known as the backing up rolls, while the pair of smaller rolls positioned between are known as the working rolls. The four outside rolls are made cut gear is mounted on each screw and these are meshed in pairs with gears keyed to a common shaft on the outer side of each housing. Each of the two common shafts, as will be noted in Fig. 2, is equipped with a large handwheel which is operated from the rear side of the mill. Turning the wheel to the right or left actuates the gears and screw, and, thus increases or decreases the gap between the two working rolls. The hub of each handwheel is made slightly different than those of the ordinary jobbing mill handwheels. As will be noted in Fig. 5 a notch is cut in the hub. A dog, similar to a lathe dog, through a stand of pinions, a different arrangement is used. The top working roll is driven from one side, while the bottom working roll is driven from the other. Each roll is coupled to its respective reduction gear set, which receives power through a common shaft from a variable-speed motor of 350 horsepower. The working rolls have a surface speed of 250 feet when operating at a maximum speed. The backing-up and working rolls and bearings are water cooled, the piping arrangement being shown in Fig. 3. Each of the top backing-up rolls are

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Avoids Embrittlement in Malleable Ir

New Process of Heat Treatment and Quenching Removes Galvanizing Difficulties and Aids Machining—Loss of Product Reduced Materially

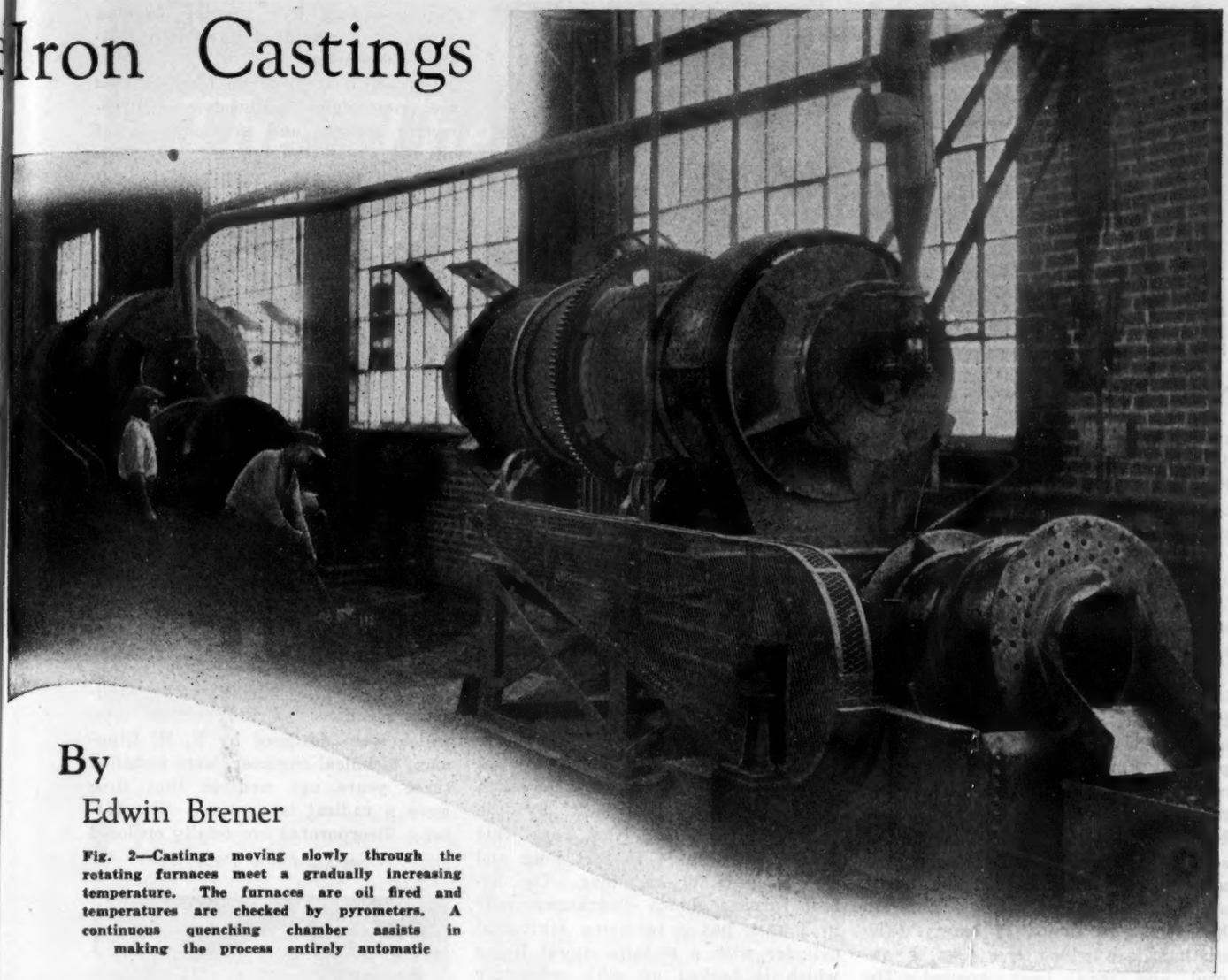
EMBRITTLEMENT of malleable cast iron subjected to the hot-dip galvanizing process, has been the shrouded specter that at times has confronted the galvanizer and the manufacturer ever since the demand for rust and corrosion proof malleable iron has been known. Moldenke in his book, *Production of Malleable Castings*, published in 1911, suggested the use of sherardizing instead of galvanizing to prevent the castings from becoming too hard to be threaded.

Sherardizing consists of applying a zinc coat to iron by the dry process. The annealed malleable castings are cleaned by sand blasting to remove any scale or burned-on sand, placed in a lye bath to remove any grease and then washed thoroughly with hot water. The castings next are pickled in hydrofluoric acid to remove all foreign matter, washed in hot water and then placed in a boiling solution of cyanide to counteract any remaining acid. The castings are dried and packed in the sherardizing drums between layers of zinc dust. These drums are set in a furnace and brought to a temperature between 823 and 843 degrees Fahr. and held at this temperature for 5½ hours. The drums are rotated slowly to coat the material thoroughly with zinc. Although the temperature at which sherardizing is carried on is lower than that of galvanizing, embrittlement occurs. The process also is more expensive than that of galvanizing, and the finish obtained is not as bright. Embrittlement in zinc coated castings, regardless of the process used, continued to occur without any satisfactory explanation and gradually grew worse when the higher tensile strength specifications for malleable were developed and standardized by the American Society for Testing Materials. The physical properties of malleable iron depend greatly on the carbon content and in order to increase the tensile strength, the carbon is maintained between 2.40 and 2.50 per cent. This lower carbon is necessary, because every additional carbon granule decreases the tensile strength.

Since the carbon is lowered, an increase of silicon follows. Silicon is used to control the graphitization of the carbon and if none is present, the graphitization is retarded to a commercially prohibitive degree. These two factors, lower carbon and higher silicon, seemed to increase the tendency toward brittleness in hot-dip galvanizing, so much so, that the maker of malleable castings would only guarantee a delivery of good castings to the galvanizer. Any defect after galvanizing was borne by the galvanizer. Since many manufacturers desired galvanized malleable iron castings, the situation was rather strained. The Ohio Brass Co., Mansfield, O., one of the largest manufacturers of high tension electrical insulators and railway equipment, had its attention forcibly drawn to the problem of brittleness by high losses of a casting used on insulators, that was given an individual physical test. This loss ran from 20 to 40 per cent and caused much apprehension as to whether this casting ever could be made satisfactory when given a hot-dip treatment. After some consultation it was decided to institute a research investigation and determine the root of the trouble. L. H. Marshall, metallurgist, was assigned this difficult task under the supervision of Fred L. Wolf, technical director. In some quarters it was believed that pickling was responsible for the deterioration, but through a series of impact tests it was shown that pickling the castings did not give divergent re-

FIG. 1—CASTINGS ARE HAND DIPPED IN GALVANIZING. BATH TEMPERATURES ARE REGULATED CAREFULLY AND HOODS CARRY OFF FUMES THAT MIGHT ENDANGER THE WORKMEN'S HEALTH

le Iron Castings



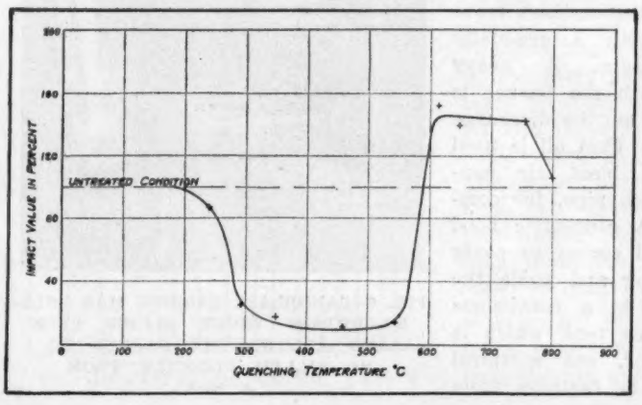
By

Edwin Bremer

Fig. 2—Castings moving slowly through the rotating furnaces meet a gradually increasing temperature. The furnaces are oil fired and temperatures are checked by pyrometers. A continuous quenching chamber assists in making the process entirely automatic

sults and accordingly that process was not held responsible for the condition. The etching effect of molten zinc was considered, as it was thought there was a possibility of the zinc causing small scratches that would be starting points of larger fractures. Tests disproved the danger from this source. Observations of conditions led the investigators to believe that embrittlement was a function of heat treatment rather than chemical composition and the problem was attacked from this angle.

After carrying out numerous other tests, Mr. Marshall decided to run a series of heat treating and quenching tests. Taking the regularly annealed material as 100 per cent under the impact tests, the specimens were subjected to various temperatures and quenched. Impact tests were performed and it was found that the value dropped gradually as the temperature increased and reached the lowest point between 750 and 930 degrees Fahr., or near the temperatures at which hot-dip galvanizing and sherardizing are carried on. However, it was noticed that the resistance to impact increased sharply after this point and gave values of 50 per cent more than the original untreated specimens around 1200 degrees Fahr. The results obtained from these tests were plotted and a



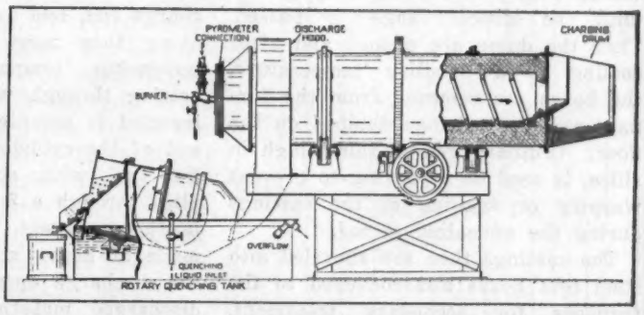


FIG. 3, LEFT—RESISTANCE TO IMPACT DECREASES AS TEMPERATURE INCREASE. FIG. 4, ABOVE—SECTIONAL VIEW OF FURNACE SHOWS SPIRAL LININGS IN FURNACE AND QUENCHING TANK

FIG. 5—OIL-FIRED SEMIMUFFLE FURNACES HEAT TREAT CASTINGS OF INTRICATE FORM THAT MIGHT BE DAMAGED IN THE ROTATING FURNACES

curve drawn which is shown in Fig. 3. Specimens heated to 1200 degrees Fahr., and quenched were galvanized by the hot-dip process and found to suffer no embrittling effect.

Since the experimental tests showed a good uniform product, the heat treatment after the regular anneal was patented and put on a production basis.

The average analysis of the malleable iron produced by the Ohio Brass Co., is: Silicon, 0.80; manganese, 0.35; sulphur, 0.05; phosphorus, 0.15; and carbon, 2.75 per cent. By increasing the silicon, the tensile strength could be advanced, but that would make it harder to secure sound castings. To care for any lowering of tensile strength, the sections are made thick enough to have a large factor of safety. The castings are given the regular anneal and then heat treated. The method as practiced at this plant is as follows:

The white iron castings are annealed in furnaces designed by the Holcroft Co., Detroit. These furnaces are fired by powdered coal and pyrometers are used to check the temperatures. The temperature is brought up to 1650 degrees Fahr., as quickly as possible and held at this temperature for 60 hours, after which the castings are allowed to cool at the rate of 5 to 10 degrees per hour until the critical range is passed. Then the doors are opened and after cooling to a handling temperature, the boxes are removed from the furnace and the castings dumped on the floor. Ordinary gravel, fairly high in silica, is used as a packing to prevent warping or sagging of the castings during the annealing period.

The castings then are shoveled into steel tote boxes and conveyed to the furnaces for secondary treatment. Two rotating furnaces and one semimuffle furnace comprise the units used in this secondary treatment. In case of the rotating furnace, the castings are shoveled in one end and the slow rotation of the furnace carries them through the heating chamber slowly enough so that all parts of the castings assume the furnace temperature of approximately 1200 degrees Fahr. On reaching the opposite end of the furnace, the castings are quenched suddenly in hot water at the temperature of about 175 degrees.

The furnaces used in the heat treating process are of two types, as was stated, the rotating and semimuffle type furnaces. Both types are oil fired. The rotating furnaces of which there are two, were built by the W. S. Rockwell Co., New York. One of the furnaces is 15 feet long and the other is 20 feet long. The 20-foot furnace shown diagrammatically in Fig. 4, has a revolving horizontal cylinder with a metallic spiral lining which is backed up with refractory material between the lining and the outside shell. The cylinder is mounted in two steel rings which rest on steel rollers that allow it to rotate. The cylinder is motor driven, the motion being transmitted by a chain and suitable gears to the large gear mounted on the center of the cylinder.

The material placed in the charging drum is automatically conveyed through the numerous convolutions in the lining to the discharge end. The oil burner is placed at the discharge end, and as the castings move along they meet with a gradually increasing temperature. A heavy casting through which the burner is inserted is mounted on the discharge end of the cylinder. Fuel oil is used for fuel with soft blast air supplied through a 5-inch pipe, for combustion purposes. A concentric hood made of heavy steel serves to cover the discharge opening and guide the discharged material to a continuous quenching tank. This tank which is driven by the motor, has a spiral lining that carries the castings from the quenching bath to the opening where they are discharged into suitable receptacles.

Correct heat treating temperatures are maintained uniformly by pyrometric control and manipulation of oil and air at the burners. The furnace burns about 8 gallons of oil per hour and has a capacity of 2400 pounds of castings during this time. A view of the rotating furnaces is shown in Fig. 2, and that of the muffle furnace in Fig. 5.

The operation in the muffle furnace is the same except that the castings are pushed through the furnace by hand. Although the temperature at which the heat treating is done, is under pyrometric control, a further check is maintained to assure that this treatment has been uniform.

This check consists of heat treating the castings in 300 pound lots and taking a casting from each lot. The casting is put in a vise and hammered to determine its malleability.

After the heat treatment and quenching, the castings are taken to the sandblast room and cleaned, preparatory to galvanizing. The sandblast machines of the suction type which were designed by F. R. Dippman, technical engineer, were installed three years ago and at that time were a radical innovation. The features incorporated are totally enclosed

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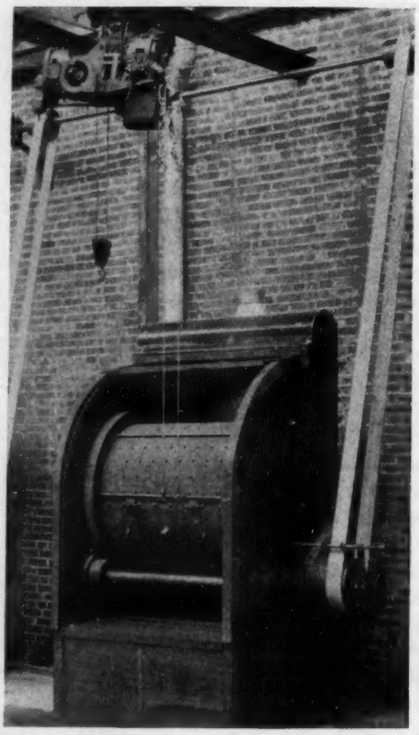


FIG. 6—SANDBLAST CABINET HAS ROLLER-CURTAIN WHICH SLIDES BACK AND ALLOWS THE BARREL TO BE FILLED DIRECTLY FROM A BOX

The Theory and Practice of Rolling Steel

By Wilhelm Tafel

Translated from the German by Richard Rimbach

Chapter IV—Continued

ONE of the oldest roughing pass designs is the gothic pass a diamond with square rolling, but with the side arched instead of straight. The gothic in comparison with the diamond has the advantage that the angles are blunter in the corners and therefore cool less. It almost approaches the round cross-section in regard to uniform cooling. The arched outline tends to counteract the spread, so that somewhat larger reduction can be given without the danger of serious fin formation.

On the contrary a disadvantage is, that the gothic has a greater tendency to fall over, than the diamond-shaped or rectangular roughing pass. It requires a profiled rolling course, which is not to be recommended, because the stock is held in the cut-in grooves with difficulty. It is used in special cases particularly where hand roughing rolls are employed. If the rolling is done with the square three-high, the stock is entered in pass *a*, as shown in Fig. 105, goes into *b*, turned 90 degrees and then into *c* and *d* and finally re-entered into *d* to obtain diagonals nearly the same size. Frequently the smaller gothics are put in the upper roll according to passes II and IV in Fig. 106, or the top roll is made to enter the middle roll, as shown by 2 and 4. In this case the order is 1, 2, 3 and 4 and I, II, III and IV respectively. Entering twice no longer can be done in the same pass. The next largest must be used as for example, from III into II, or from 4 into 3; and the stock must be entered three times. The latter alternative denotes lost time and unnecessary cooling while the former does not give exactly equal diameters. The dead pass however, is used frequently, because it saves 50 per cent of the space. Where space is available, it is advisable to have the top and bottom rolls alike.

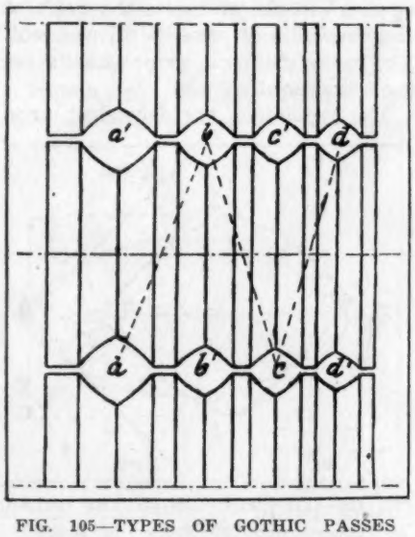


FIG. 105—TYPES OF GOTHIC PASSES

A useful construction for gothics is shown in Fig. 109. Geuze advises an arc radius $R = b$ and a rounding off radius of $r = 0.1\ R$. Kirchberg advises $R = b$, $r = 0.2\ h$. Gothics with smaller radii fall over easily. On the contrary arcs with $R = 1.5 - 2\ b$ frequently are used.

With gothics only the spread is figured, because when the corners, *AA'* in Fig. 109, are rounded off, the pass is swept sideways in an arc at *B* and *B'*. Every pass, in which these round corners or arcs are not yet drawn in has a spread equal to the height of

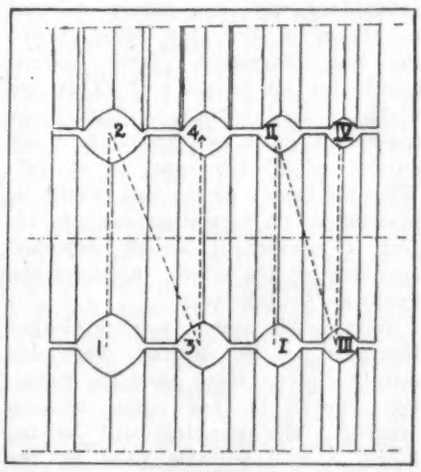


FIG. 106—GOTHICS IN TRANSPOSED POSITION

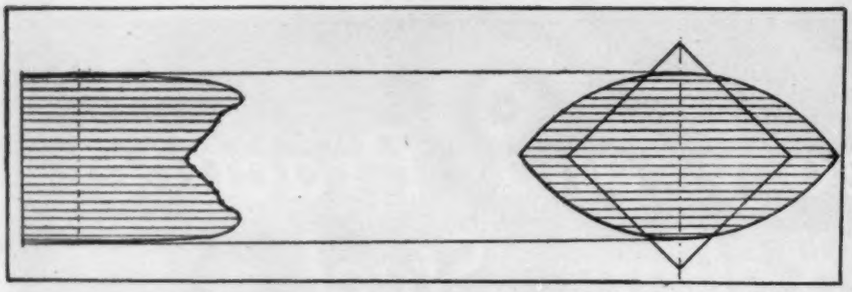


FIG. 107—ELONGATION DIAGRAM FOR AN OVAL PASS INTO A SQUARE

the previous. It is customary, to express the reduction of the gothic and the diamond roughing pass by a relation of the diagonals. One speaks of 1/7 or 1/9 reduction, if the vertical to the horizontal diagonal of the pass bears the relation of 6:7 or 8:9 respectively. The reduction is then $(6/7)^2$ and $(8/9)^2$ respectively.

The gothic pass is assumed as a surface with straight outlines. Pass I has a height h_1, and a width b_1. Pass II has a height of h_2 and a width b_2. Then,

$$Q_2 = \frac{b_2 \times h_2}{2}$$

$$Q_1 = \frac{b_1 \times h_1}{2}$$

$$A = \frac{Q_2}{Q_1} = \frac{b_2\ h_2}{b_1\ h_1}$$

$$b_2 = h_1$$

The relation of the diagonals follows:

$$\text{let } \frac{h_1}{b_1} \text{ and } \frac{h_2}{b_2} = y$$

$$A = \frac{h_1 \times h_2}{b_1 \times h_1} = \frac{h_2 \times y}{h_1} = y^2$$

Following are reduction coefficients and limits for springing:

		h/b	A in %	Spring in inches
D up to 1.575"		6/7	0.26	0.118—0.157
D up to 3.937"		7/8	0.23	0.157—0.236
D up to 7.874"		8/9	0.21	0.236—0.396

In the foregoing table D is understood to be the diameter of the circle inscribed in the pass. It also can be determined with the square calipers as shown in Fig. 108 according to the size designated. Geuze recommends for all passes 1.33 D as the width of the gothic, and 1.12 D as the height which corresponds to a reduction of 26 per cent, or of 1/7. With the larger passes this results in pronounced fin formation and any effort to prevent it by an increased rounding of the edges, increases the tendency to fall over.

With gothic passes, a large elongation can not be attained. They are merely a preparatory pass. The reduction cannot be too large, because otherwise the stepping will be too large, and a suitable pass on the roughing roll for each size will not be available. From this latter point of view, the gothic and diamond passes are superior to the flat and elongating passes of a blooming mill. They differ from the latter in that with every pass the cross-section closely approximates a square, which is desirable as a secondary pass for finishing rolls. With gothics, intermediate cross-sections can be rolled by raising or lowering the rolls. With ingot or elongating passes, on the contrary, this cannot be done because by moving the rolls the square shape is lost, and the square no longer will fit the oval and vice versa.

The diamond is a gothic with R indefinitely large. What previously was mentioned about customary elongations, the relation b/h, rounding off radius and spring applies to diamond passes. Only with the spread it is advisable to allow an additional 0.039 to 0.079 inch spread because the straight outlines hinder the spread less than the arched.

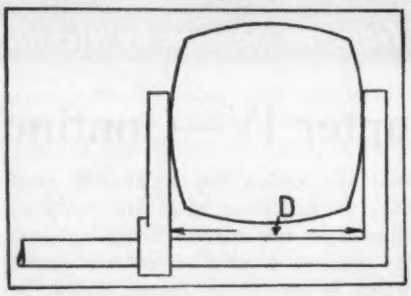


FIG. 108—DETERMINATION OF THE SIDE OF THE GOTHIC PASS

Where it is not a question, of reducing the cross-section in definite steps to have a suitable pass on the roughing roll for every size on the finishing roll, but where the sole purpose is to elongate the alternating square and oval passes, which are the roughing passes of a guide round, are the most suitable roughing passes for about 3.937 x 3.937 inches down.

The oval and square pass is suitable for pronounced elongation. An oval, which is entered into a square, receives a heavier draft in the center of the profile than at the edges as shown in Fig. 107. It is constructed, by making the ordinates at any instant equal the draft at the particular point of the profile, that is, equal to the relation of $h_1:h_2$, and, therefore, to the elongation, which this part of the cross-section would assume, if it were independent of its neighboring parts. Thus the draft from a maximum between the edge and the middle rapidly falls to zero at the edge. The result is, that the edge parts are pulled along by the elongating neighboring parts and shrinkage occurs. The total spread must therefore be small with this rolling process and the elongation correspondingly large. If the elongation in Fig. 107 is compared with the passage of the square through the oval as shown in Fig. 111, the opposite is true. The elongation at the edges is larger than in the center. The edges are held back by the center, therefore have a strong tendency to spread. This is counteracted by the arched outline of the oval. Consequently, it adds to the increase of the elongation, and, with the inner occurences in the preceding square pass, causes the spread to be small and the elongation to turn out large. In addition the stresses in every pass are large. The stock leaves the rolls stretched straight. The stresses alternate their direction in the next pass and finally equalize themselves in the whole rolling process.

An early construction of the oval from the larger square is shown in Fig. 110, of the square from the larger oval in Fig. 113. With the former the radius of the oval is equal to the square side while with the latter the diagonals of the square are equal to two-thirds of the width of the oval. Fig. 110 gives a reduction of 28 per cent and Fig. 112 of 33 per cent. With modern roughing rolls the reduction is considerably higher. A square from 0.787 to 0.984 inch, for example, is reduced from 50 to 55 per cent in the oval pass, and up to 50 per cent from the oval into the square. In the first case the draft of the vertical axis rises to 70 per cent. The rolls still will grip without being roughened.

The reductions are dependent upon

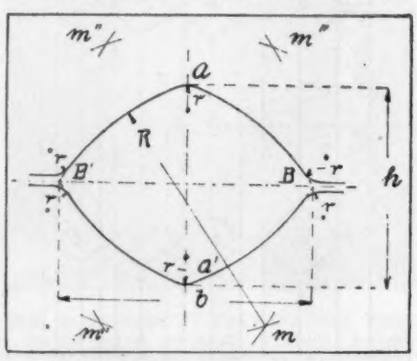


FIG. 109—CONSTRUCTION OF THE GOTHIC PASS

the relation b/h of the width to the height of the oval. With the constructions in Figs. 110 and 112 we have:

Relation	Reduction equals or approaches	Elongation
b/h = or approaches 2	30%	1.43
$b/h = 3$	35 to 40%	1.5 to 1.7
$b/h = 3.5$	50%	2

With squares larger than 0.984 inch, it is advisable with the larger masses to be displaced, to use a reduction less than 50 per cent. The same applies for squares under 0.787 inch because with this smaller cross-section the stock already is colder, and therefore the plasticity is less.

Good pass designs of high-speed roughing rolls are obtained if a reduction ranging from 50 to 55 per cent is chosen with 0.787 to 1.378 square inches but above and below this to gradually let it go back to 30 to 35 per cent. Sufficient spread must be allowed, either by estimating or by using Geuze's rule, which for the square-oval, is entirely hypothetical. A spreading surface gives equal to 0.25 to 0.32 times the displaced surface as shown in Fig. 113.

Finally it should be determined if the vertical axis at any place receives more than 70 per cent draft. In Fig. 113, $(H_2 \div H_1) \times 100$ equals or approaches 30.

For example, suppose a high-speed roughing roll is to be designed for a maximum section of 2.756 × 2.756 inches, a smallest and a minimum section of 0.394 × 0.394 inch. The latter gives a cross-section of 0.155 square inch. An elongation of 1.5 from the previous oval gives for this a cross-section of 0.233 square inch and for the next largest square pass 0.349 square inch which is equal to a side length of 0.591 inch. If an elongation of 1.7 is used, the next largest profile, which is an oval with 0.589 square inch and a square with 1 square inch, equals or approaches 1 inch length of side. This gives a profile size, with which a maximum elongation equal to 2 is permissable; but to remain with the present stepping,

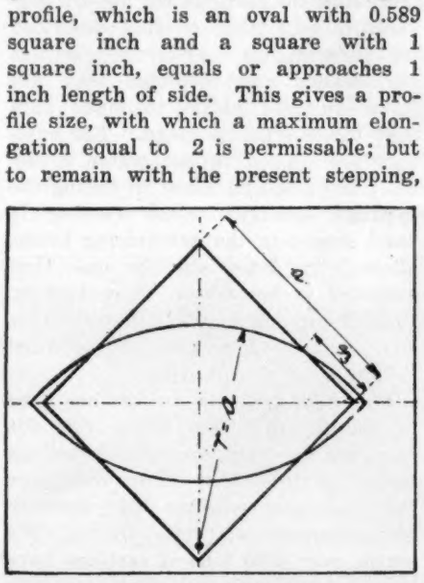


FIG. 110—CONSTRUCTION OF AN OVAL FROM A LARGE SQUARE PASS

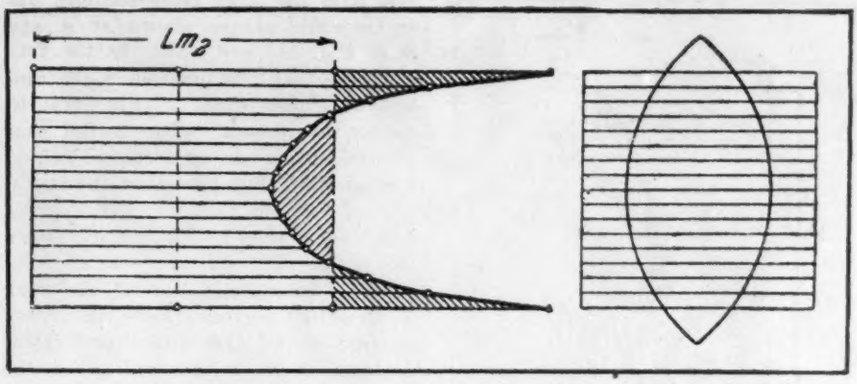


FIG. 111—ELONGATION DIAGRAM FOR A SQUARE INTO AN OVAL

the maximum elongation should be 1.9. This gives for the next oval 1.899 square inches. For the square we will go back to an elongation of 1.7 and receive 3.224 square inches which is equal to a side length of about 1.811 inches. Finally for the last pass the elongation is 1.5. This gives a next higher oval of 4.836 square inches and a square cross-section of 7.254 square inches which is equal to a square of about a 2.677

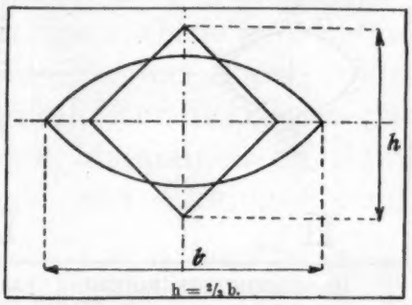


FIG. 112—CONSTRUCTION OF A SQUARE FROM A LARGE OVAL PASS

inches side. The exit billet is 2.756 × 2.756 inches or 7.695 square inches. To be on the safe side the 0.341 square inch which still is to be displaced over two passes is divided and, therefore, raises the oval cross-section from 4.836 to 5.007 square inches.

If the exit billet had been 2.362 inches or 3.150 inches, the elongation coefficients would be increased or decreased so that one would receive a cross-section of 5.580 and 9.920 square inches respectively. Or in the latter case if elongations of about 1.5, 1.7, 1.9, 1.7, 1.7 or of 1.6, 1.8, 2, 1.8, 1.6 did not suffice, a square and an oval would have to be added to each. The increase of the elongation of 1.5 in the large cross-sections to from 1.6 to 1.7 would be desirable. A systematic comparison between the desired and permissable quantities leads to the goal more advantageously than formulae or constructions.

If the area is assumed to approach a parabolic surface, and the relations b/h equals 3, 3.2, 3.4 and 3, the ovals then are determined as follows:

between squares:
0.394" and 0.590" $Q = 0.233"^2 = (b \times b/3 \times 2) \div 3$ or $b = 1.024$, $h = 0.343$
0.590" and 0.984" $Q = 0.589"^2 = (b \times b/3.2 \times 2) \div 3$ or $b = 1.634$, $h = 0.512$
0.984" and 1.811" $Q = 1.899"^2 = (b \times b/3.4 \times 2) \div 3$ or $b = 3.110$, $h = 0.913$
1.811" and 2.756" $Q = 5.007"^2 = (b \times b/3 \times 2) \div 3$ or $b = 4.744$, $h = 1.875$

With the height and width, three points are given for each half of the oval and therefore the arc bounding them.

If the draft in the center of the square profile does not exceed 70 per cent, the test shows that the diagonals of the square equal 1.41 × the square side. The draft in the center for a square,

0.394" = (1.024 — 1.41 X 0.394) ÷ 1.024 = 46%
0.984" = (1.634 — 1.41 X 0.591) ÷ 1.634 = 49%
1.811" = (3.110 — 1.41 X 0.984) ÷ 0.984 = 55%
2.756" = (4.744 — 1.41 X 1.811) ÷ 4.744 = 46%

The passes must have sufficient spread. Where this is not the case, the relation $b:h$ has to undergo a corresponding correction. The error is smaller if the spread is assumed too large rather than too small; in the first case flat ovals or squares result which are somewhat underfilled; in the latter case fin formation results which leads to laminations, flaws or other defects, or, if the fin is rolled in, the quality is impaired.

Elongation passes often find use with continuous roughing rolls. The individual passes lie in front of one another on different short rolls, which turn with increasing speeds. The stock is led from one to another by stripper and tubular guides, which lie between the rolls and twist the stock 45 or 90 degrees. It is difficult to fit the circumference speed of a roll exactly to the speed with which the stock leaves the previous roll or vice versa because the circumference speed remains constant, while the exit speed depends on the temperature, water cooling, etc., and therefore is constantly subjected to small changes. If a certain excess of the circumference speed is per-

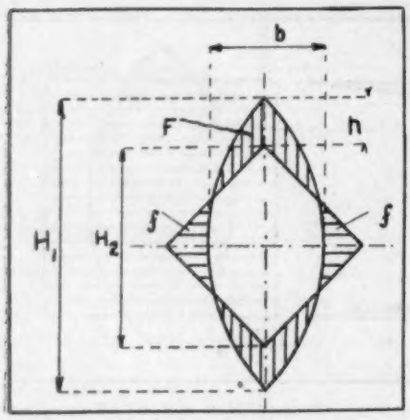


FIG. 113—SPREAD OF AN OVAL ACCORDING TO GEUZE'S RULE

mitted, the stock is drawn between the stands. This means an increase of the slip between the rolls and increased loss of power and roll wear.

The advantages of this type mill include the saving of all hand work in rolling, which is counterbalanced many times over by the work of adjusting; and the use of shorter and lighter rolls. The longer the body of the roll, the larger the diameter must be. Small diameter rolls do not spread the stock to any large extent but elongate it considerably. This diminution of the spread and increase of the elongation work is further increased artificially by the drawing action.

Continuous roughing rolls are recommended where large tonnages of same section are to be delivered from the finishing rolls. Instead of the oval pass for large cross-sections, flat or trapezoid shapes shown at *A* and *B* in Fig. 114 are used. In the former case they are pinched in the center, as shown at *C* in Fig. 114, to reduce the spread. With the flat pass shapes several can be arranged behind one another, thus obviating the necessity of turning the stock, 90 degrees after each pass. The shapes shown in Fig. 115 also are advisable as early passes. Between II and III the stock is turned 90 degrees. Here the arched contraction of the upper and lower outlines causes a diminution of the spread by increased elongation of the center, which causes the outside parts to shrink.

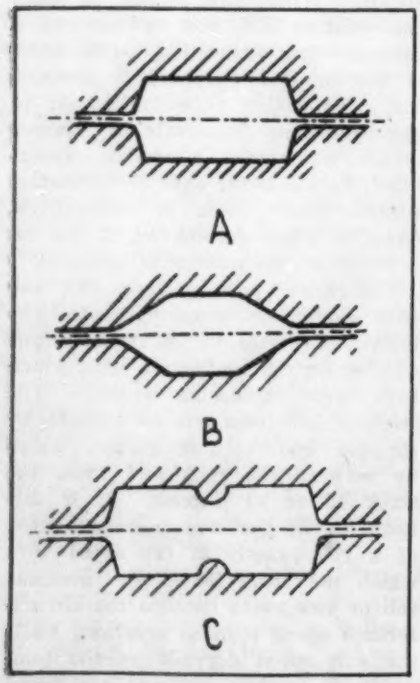


FIG. 114—(*A*), DIAGRAM OF FLAT ELONGATING PASS. (*B*), DIAGRAM OF TRAPEZOID-SHAPED ELONGATING PASS. (*C*), DIAGRAM OF RECESSED FLAT PASS

Massachusetts Apprentice Plan Outlined

A complete plan for apprentice training, with copies of forms for agreements, records and gradings, has been prepared by the Western Massachusetts branch of the National Metal Trades association, headquarters at Springfield. The local apprenticeship committee is carrying on a campaign of education to show boys and their parents the truth of the situation as it exists in the machine shops today, proving to them there is a scarcity of men skilled enough to advance to the most responsible positions.

Applicants must be not less than 16 years of age and must possess the equivalent of a grammar school education. The basic apprenticeship term is to be four years. Apprentices having a high school education or its equivalent or previous machine shop experience can qualify through an examination for credit on their course, but a minimum of 7500 hours, or about three years, of actual shop work will be required. Owing to fluctuation of wage rates a definite rate for the entire period is not set, but it is the plan to pay apprentices a percentage of the average hiring rate for skilled journeymen, making an adjustment at intervals of six months. A bonus of $100 will be paid at the successful completion of the course.

Avoids Embrittlement of Malleable Iron

(*Concluded from Page* 994)

bearings and gears, the use of roller bearings for moving parts, and the use of a single shaft drive. One of these machines is shown in Fig. 6. Each barrel has a capacity of 600 pounds. Another feature is the use of the cut-off, steel, roller-curtain door.

The next step in the procedure after cleaning is to file or grind off sprue or gate marks, pins, etc. The castings are straightened and any necessary holes bored to the proper size before the castings are inspected. They then are ready for shipment or for the galvanizing kettles.

Hot-dip galvanizing is the process in use at the Ohio Brass Co. A view of one of the four galvanizing kettles is shown in Fig. 1. The zinc bath is maintained at a temperature from 850 to 860 degrees Fahr. The preparation of the castings for hot-dip galvanizing is similar to that described for sherardizing. After the castings are cleaned and inspected they are given an acid pickle to make sure that the surface is clean. The castings are dipped in hot water to remove the acid and assist in drying the castings quickly. Each casting is hand dipped in the galvanizing kettle, allowed to drain slightly and then quenched in hot water. The average time of dipping is 1½ minutes. This has been found to give the required thickness of zinc coating.

This heat treating process has been in use by the Ohio Brass Co., for two years. All malleable castings made by this firm have undergone this treatment whether they were to be galvanized or not. During this period over 8000 tons of castings have been treated with but slight loss due to embrittlement.

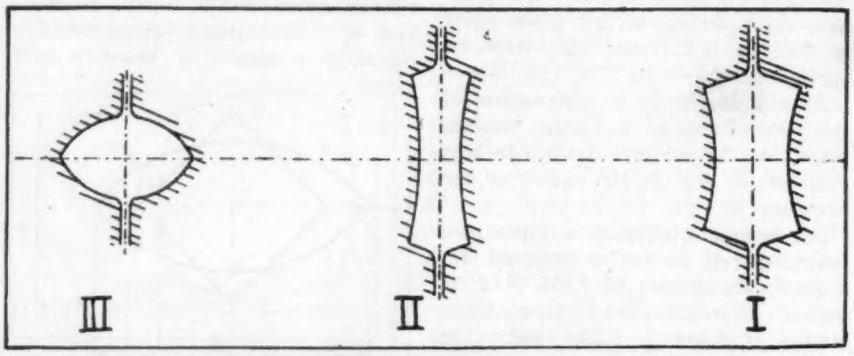


FIG. 115—CONTINUOUS ROUGHING PASSES WHICH ARE ADVISABLE IN EARLY STAGES OF REDUCTION

Fig. 1—A view during construction of the new Birmingham, Ala., plant for making centrifugal cast iron pipe

Making Pipe by Centrifugal Process

Birmingham Pipemaker Builds Large Plant To Manufacture Cast Iron Pipe in a New Type Refractory Mold—Product Shows Improved Physical Properties—Careful Check Maintained on Raw Materials and Casting Operations

TWO methods may be employed in the manufacture of cast iron pipe. One is known as the sand cast process in which a sand mold is prepared and poured according to the usual foundry practice, while the other is known as the centrifugal process and consists in pouring the iron into a mold which is revolved at a speed sufficient to throw the metal to the face of the mold and to hold it there until it has cooled to the point where it will retain its shape.

A new development employing the centrifugal method of spinning the metal into shape but using a refractory mold instead of a metal mold has been made recently by the American Cast Iron Pipe Co., Birmingham, Ala. The method proved so successful that just a short time ago this company completed a new plant which has a nominal capacity of 50,000 feet of refractory mold centrifugally cast iron pipe a day with a range of sizes from 4 to 12 inches inclusive and which is capable of operation 24 hours per day. Fig. 1 shows the new plant while it was under construction. It is built adjacent to the old plant and so located that it could be supplied with melted iron from the cupola plant serving the old sand cast foundry.

Ordinary grades of pig iron available in the Birmingham district are used in the making of centrifugal pipe and as there are no risers or gates, the amount of return scrap is nominal. Standard by-product coke is used for the melting and modern cupola practice is followed in reducing the iron to a fluid state. Each charge of iron is carefully selected and weighed and introduced into the cupola by a mechanical charging machine. Operation of the cupola is under complete control through the use of recording pressure gages, volume gages, recording pyrometers, and similar equipment, so that a uniform quality of molten metal is produced throughout the entire heat.

The unit method of production is followed, that is, one pipe is cast to the flask. The flask is made of cast iron and is machined accurately to make it possible to do repeat work, furthermore, the refractory lining or sand mold must be rammed exactly concentric with the spinning surfaces of the flask. Red loam molding sand coming from the Montgomery, Ala., district is used as a base for this refractory lining and to it is added a sufficient amount of washed silica sand to produce a molding sand of the proper specifications. This sand

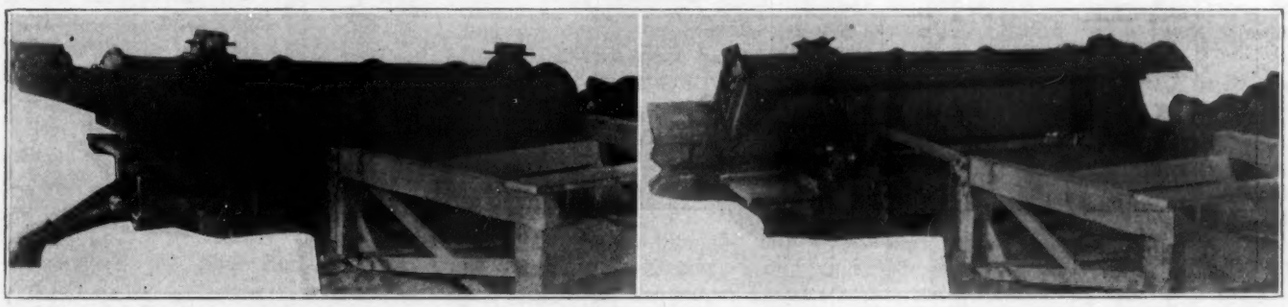


FIG. 2. (LEFT)—ONE OF THE EXPERIMENTAL MACHINES EMPLOYED IN CASTING PIPE CENTRIFUGALLY. IT IS HERE SHOWN IN THE POSITION FOR POURING AND ROTATING THE MOLD. (RIGHT)—THE SAME MACHINE WITH THE TOP RAISED FOR RECEIVING A FLASK

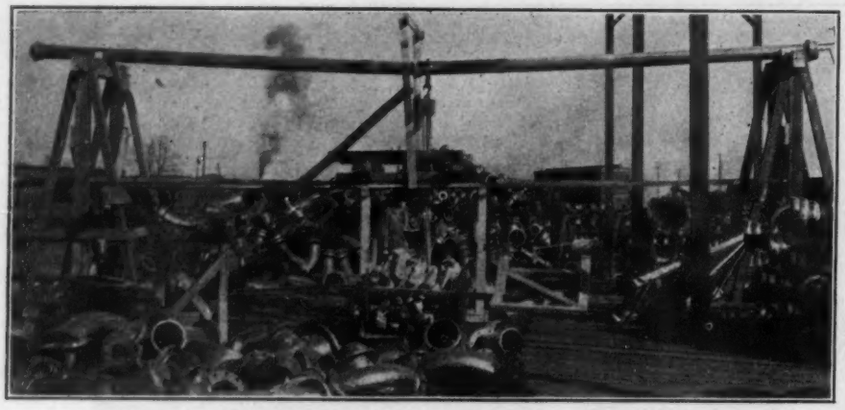


FIG. 3—ONE TEST FOR CAST IRON PIPE IS JOINING TWO SECTIONS AND APPLYING A LOAD TO THE JOINT UNTIL FAILURE OCCURS

is checked for the amount of bond, permeability, moisture and grain size, all four properties being found important. The chief bond of the molding sand comes from the red loam, but it may also be obtained through the use of yellow field clay, fire clay, or glutrine, which is applied to the sand as a thin wash to give additional bond to the green sand.

When rammed in the flask, the sand is faced with ordinary pipe foundry facing made from nut coke which has been pulverized to the consistency of flour. This facing is used throughout the Birmingham district as pipe mold facing, and is received in the form of a semitempered material, being just moist enough to prevent dusting. As required, it is introduced into a mixing machine with water and reduced to a liquid with the facing material in suspension and in this state is referred to as blacking. The sand used for making the socket cores, which form the inside of the bell of the pipe, is a fine grained washed silica sand such as is used in making oil cores for radiator castings. This sand is mixed with linseed oil for a binder.

The only other raw material used in making centrifugal cast pipe is tar, commonly known as coal tar. This is purchased on a specification governing its content of moisture and free carbon and is delivered to the plant in tank cars of approximately 10,000 gallons capacity. It is pumped from

FIG. 5—A FRACTURE OF A PIPE JOINT BROKEN BY THE CROSS BEND TEST SHOWN IN FIG. 3

the cars into storage tanks and removed from them to the dipping vats as required.

The following discussion will describe the process of making the molds, pouring them, and testing the finished product. Reference to Fig. 4 will reveal two three-way ramming stations marked 1. The empty flasks come down the run as indicated at 2 and are received on a tilting table in the run which delivers them into the vertical position on the ramming stations as shown at 3. The flasks are handled three at a time and these two ramming stations are used to alternate the work, so that while they are ramming on one station, they are completing the rest of the work and making the change on the other station.

Once the flasks are in the vertical position and properly located on the ramming tools, the three patterns are lowered into the flasks, being handled from above by a stationary pattern hoist. The pneumatic ramming machines then are moved into position by mechanical means overhead and lowered into the individual flasks. The sand delivery chutes are placed in position and the ramming operation proceeds throughout the length of the mold, which is about 16 feet. Time consumed in ramming is about 1½ minutes.

The patterns are drawn three at a time from the molds, the molds are lifted off the ramming stools by a hydraulic lift and the blacking is applied to the face of the molds while in a vertical position. They are then returned to the horizontal position by the tilting table and are ready to move forward on the flask run, as indicated in 4, Fig. 4. The flasks then proceed to 5, where they are picked up by an overhead crane 6 and delivered to the casting machines at 7. In this operation, the flasks are handled two at a time by a special device attached to the crane.

The top half of the pipe casting machine located at 8 in Fig. 4 is elevated to sufficient height, as shown in Fig. 2, to allow the flask to roll in sidewise. The machine is closed, the motor attached to the flask by a quick de-

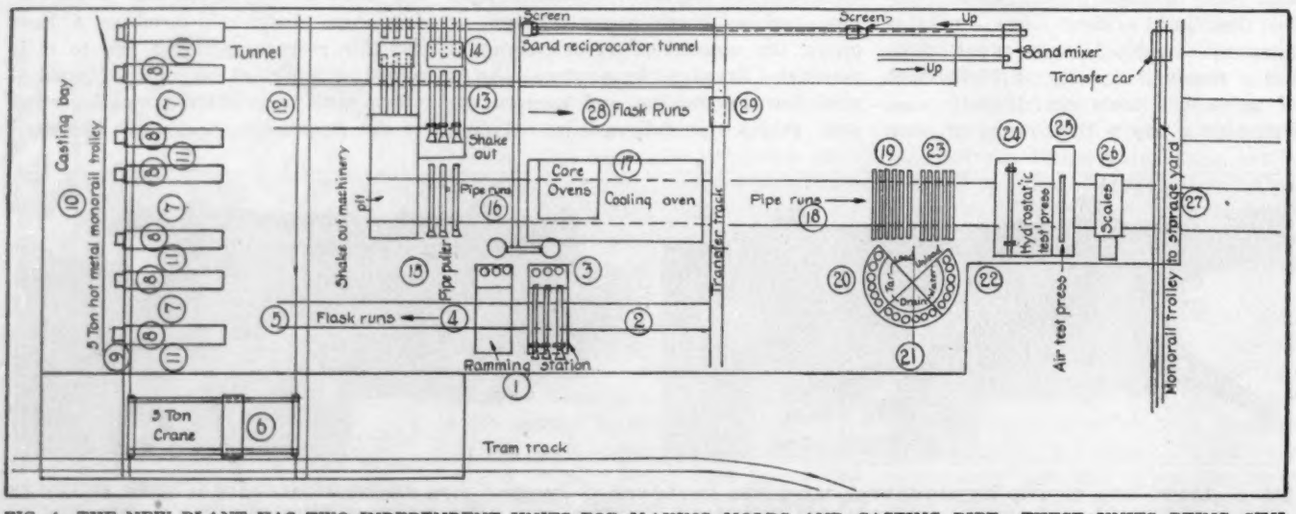


FIG. 4—THE NEW PLANT HAS TWO INDEPENDENT UNITS FOR MAKING MOLDS AND CASTING PIPE. THESE UNITS BEING SIMILAR, ONLY ONE IS SHOWN IN THIS LAYOUT

tachable clutch, the proper amount of iron is placed in the pouring ladle shown at 9 from the large ladle on the monorail trolley 10, the machine then is inclined to the proper angle with reference to the horizontal and the pouring operation proceeds. Immediately after the metal is poured, the mold is set spinning and the iron is placed on the wall and held there in the form of a tube until it is sufficiently set to retain its shape. At this point the machine is shut down.

The mold with a finished pipe in it is rolled on through the machine and takes the position shown at 11. From this station, it is moved to 12 where the end trimmings are removed from the flask, the socket sand removed from the bell end of the pipe. All of this takes place within 10 minutes, including the casting and spinning operation.

The flask with the sand and pipe in it now passes to the stripping machine as shown at 13 which is a three-way machine built on a rather abrupt incline. The flasks are placed on a tilting table and tilted to the incline in which position they are held while the sand is being removed from the mold. The flasks with the pipes still in them are returned to the horizontal position by the tilting table and the pipe puller 15 removes the pipe from the flasks three at a time, and deposits them on the run at 16. In this run there is a conveyor which immediately conveys the pipe into a cooling oven at 17.

The cooling oven is equipped with a slow moving conveyor which gradually rolls the pipe through the oven, where it is kept under temperature control for approximately 40 minutes and until it has reduced to a temperature of at least 500 degrees Fahr., at which time it is ready to be removed from the cooling oven and enter the cleaning department shown at 18 in Fig. 4. When the pipe is cleaned, it passes to station 19 where it is picked up by a small hoist and taken to station 20. Here it is lowered into a bath of tar and is held in this bath a sufficient length of time to take a proper coating. The bath is under temperature and chemical control.

The pipe now passes to station 21 where it is permitted to drain free of surplus tar and then goes to 22 to continue cooling. After the cooling it passes to station 23 and is lowered to the pipe run again to proceed to the hydraulic testing press 24 Gas pipe is not coated but after being tested in press 24, it passes to press 25 and is given an air test of 25 pounds per square inch under water. The pipe now is taken to station 26 where it is weighed and the weight marked on the outside and inside of each section. Passing now to 27, the pipe is picked up by a monorail hoist, or truck, and distributed on the loading yard as a finished product.

From station 13, Fig. 4, the empty flasks proceed down the run to 28 and then to transfer car 29 and are taken across to flask run 2 and there proceed through the ramming station again in their regular turn. In this shop are two units which operate independently of each other, except that they have the same sand handling and preparing machinery and the same source of iron supply. This second unit lies just above that shown in Fig. 4.

As stated previously, hot metal is supplied by the cupola plant in the old sand cast foundry. This iron is brought into the centrifugal casting plant at a point shown in the upper left-hand corner of Fig. 4. The cupolas which have tilting spouts are served by three cupolas; one ladle always being at the cupolas and another pouring. An I-beam trolley system, runs along in front of the cupolas and then into the casting bay of the plant, where it passes in front of the 12 centrifugal pipe casting machine. On this trolley system are two 5-ton monorail hoists.

The ladles holding about 4 tons of hot metal are picked up at the cupola station, moved into the new plant and poured into the ladles on the individual machines, each ladle being filled with the proper amount of metal for the pipe being cast. Sufficient metal remains in the large ladle to repeat the operation, after which this ladle is returned to the cupola for refilling. During the intermission a ladle has been filled so that the operator sets down one ladle, picks up another and returns to the casting machines. Each pouring trolley takes care of six pipe machines and they operate independently of each other, although either of them can charge any of the machines when necessary.

Great care is taken in selecting, mixing and melting the raw materials to insure a uniform and high quality pipe. Each carload of iron coming into the plant is sampled and an analysis made before the car is placed for unloading and in making up the mix, the iron is used according to this analysis. The coke for melting the iron is tested in the laboratory for ash and volatile matter. An automatic recording pyrometer installed at the cupola spout registers the temperature of the iron as it flows from the cupola to the ladle. This record also shows the number of taps make during the operation and the duration each tap. As the iron enters the casting bay and is poured into the individual pouring ladles, the temperature in each ladle is read with an optical pyrometer. This temperature is reduced to a predetermined point before pouring begins.

FIG. 6—TO TEST FOR UNIFORMITY OF SECTION, INCLUSIONS, BLOWHOLES, AND OTHER DEFECTS, PIPE IS SPLIT ENDWISE AS SHOWN HERE

In addition, 1 x 2 x 28-inch test bars are pouring, one pair of bars from each three hours operation of the cupola. These bars are broken in a stanadrd recording transverse testing machine, following which drillings are taken from the bars and chemical anayses are made for all essential elements, such as silicon, sulphur, manganese, phosphorus and total carbon.

The centrifugal casting machines

and all equipment connected with them are adjustable and interchangeable so far as pipe sizes are concerned and any machine can be adjusted to handle any size pipe from 4 to 12-inch diameter. The same applies to the shakeout and ramming stations. Preparations now are being made for making larger sizes of pipe by the same method.

Centrifugal cast pipe is a striking casting is appearance. Both outside and inside surfaces are clean and smooth, the bead and bell are true to the pattern and there are no gates and fins. Sections are uniform both circumferentially and longitudinally and the pipe is round and straight. The metal shows a gray iron fracture with a fine close-grain on the outside of the pipe as shown in Fig. 7, changing gradually to a normal medium grain on the inside. Pipe made by this method has shown a remarkable freedom from shrinkage cavities, gas pockets, blowholes and solid inclusions.

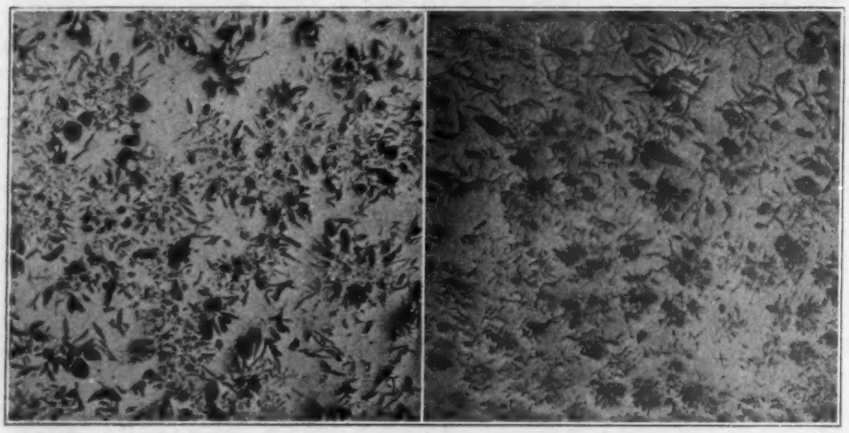


FIG. 7 (LEFT)—PHOTOMICROGRAPH OF THE STRUCTURE OF CENTRIFUGALLY CAST IRON PIPE AT ITS OUTER EDGE. (RIGHT)—A SIMILAR PHOTOMICROGRAPH FOR SAND CAST PIPE

Heavy Reduction on Cluster-Type Mill

(*Concluded from Page* 991)

equipped with pinions of the friction type which mesh with a positive pinion attached to one end of the upper working roll. The two lower backing-up rolls as shown in Fig. 6 are geared to the lower working roll by a similar arrangement, only the gearing is placed on the opposite side of the roll stand. The purpose of this arrangement is to make a positive drive and thus prevent any tendency of the rolls to drag due to cold grease or to other causes.

Sheets rolled on a mill of this particular type can be given large reduction because of the small diameter of the rolls in contact with the steel. The pressure of the working rolls under actual operating conditions is distributed equally among eight bearings of large diameter and as the speed of the backing-up rolls is slow and the amount of pressure per unit of surface is low, only a minimum amount of power is required for operation. In other words, more energy is used in reducing the metal and less energy consumed by roll friction.

By using two backing-up rolls for each working roll, the pressure necessary to reduce the steel is divided between two roll contact surfaces. This minimizes the surface pressure on the chilled-iron backing-up rolls, prevents surface spalling and increases the life of the backing-up rolls before regrinding or redressing is necessary. Moreover, the pressure is distributed to four neck bearings instead of two, as would be the case with one set of backing-up rolls.

As a result of the cluster-type mill, two methods of producing high-grade sheets, which differ from standard practice, have been developed. In the first method the sheet bars are heated to a relatively high temperature and hot rolled to within about 75 per cent of the length of the finished sheets. The breakdowns then are annealed at a normalizing temperature and pickled to remove any scale formation. Next, they are rolled to the length called for in the specification, using a cluster-type mill. The stock then is box annealed at a temperature below normalizing or sufficiently low to prevent sticking.

By reason of the fact that surface defects or blemishes are eliminated by the hardened steel rolls in the cluster mill, the same amount of care in heating and roughing down the sheet bars as exercised in standard sheet mill practice is not required. This method opens up the possibility of heating the sheet bars and packs more rapidly and of using heavier drafts during the hot reduction than is done according to regular commercial practice. Only eight steps are required by this method which are as follows:

1—Bars heated.
2—Hot rolled to 75 per cent of finished length.
3—Sheared.
4—Annealed.
5—Pickled.
6—Cold rolled.
7—Reannealed.
8—Roller leveled.

Sheets made from steel low in carbon have only small percentages of cementite to influence the grain size and, hence, if annealed at a low temperature for a considerable length of time, a coarsening of the grain size will develop as to make them unfit for commercial use. This phenomenon, known as Stead's brittleness, manifests itself in a growth of ferrite crystals, which cause the sheet to become extremely brittle.

Brittleness can be corrected by increasing the temperature of the anneal or by increasing the amount of reduction made during the cold-rolling process. However, it is impossible to increase the anneal of cold-rolled sheets to a temperature sufficiently high to eliminate Stead's brittleness for the reason that a high temperature must be employed in which event the sheets will stick together. Various researches show that if low-carbon steel is subject to cold reduction in excess of 10 per cent, Stead's brittleness will not occur, even though the steel is annealed at a temperature below normalizing. This knowledge utilized with the cluster-type mill gives rise to a second method of manufacturing high-grade sheets in which the number of steps in the processes is materially reduced.

In carrying out this method, the sheet bars ars heated and hot rolled to about 75 per cent of the finished length. The sheets are discharged from the hot mill at a normalizing temperature, sheared and then pickled to remove the scale. This is followed by cold rolling to length. The sheets then are annealed at a relatively low temperature to prevent sticking. The anneal can be carried out at a low temperature because the heavy reduction given the stock by the cold rolls prevents the occurrence of recrystalization. The sheets then are roller leveled and are ready for shipment.

A cluster mill recently was installed at the International Nickel Co.'s plant at Huntington, W. Va., and at present another is under construction. The cluster mill, which was developed by E. W. Bliss Co., Brooklyn, N. Y., is capable of rolling sheets or plates up to 60 inches wide and strip steel to any practical widths desired.

Editorials

Steel Demands Are Unparalleled

NEW high records were established by the exceptional steel ingot production of March. These represented the greatest output for any one month as well as the greatest quarter, or for that matter, any three-month period in history. Following speeded-up operations in both January and February, production in March was boosted again to a point over 92 per cent of serviceable capacity. Total output reached 4,491,689 gross tons, or 6.5 per cent above the previous top mark of 4,216,355 tons in May, 1923. Average daily production, with 166,359 tons, was 2.8 per cent over the previous peak of 161,796 tons per day for March, 1924.

In March, steel ingots were being made at an indicated rate of 51,800,000 gross tons per year. With 44,186,977 tons of ingots, 1925 established the country's best full year production. Since steelmaking capacity at the close of the year was calculated at 56,000,000 gross tons, average operation in 1925 represented 78.8 per cent. In the first quarter of 1926, production totaled 12,449,828 tons, or an average daily rate of 161,686 tons. For a first quarter period, the 1925 total of 12,153,327 tons had established the previous high water mark while for any three consecutive months, the 12,246,771 tons of March, April and May, 1923, formerly held the record. Operations thus far this year average practically 90 per cent of theoretical capacity. This accents the terrific rate of production now engaging the industry. With the peculiar and well known condition of business whereby present buying all along the line is being held so closely to current needs, it portrays equally a remarkable scale of consumption. Considering steel as a basic barometer, a tremendous physical volume of the country's trade is indicated.

Political Stability To Remain

WHILE prospects of the coming congressional campaign indicate that the elections in November for seats in the house and senate will bring forth mixed results generally, this will fail to prove little if any anti-administration feeling. The chances of gains for the opposition in the senate are good, largely because every doubtful state having a senator to elect now is represented by a Republican.

Despite contrary statements by many of the so-called political soothsayers, this year's election results will show, as is usually the case in off-year elections, that the element of personal popularity of candidates and such issues as appeal to popular sentiment in particular localities will overshadow national issues in decisive results. Much indecision has developed among the opponents of the administration as to what should constitute the national issues this year. It has not been possible to unearth any outstanding issue upon which to base an anti-administration fight. Whatever the apparent result of the contest for seats in seventieth congress, business and industry may feel assurance that economic stability will be undisturbed. The congressional elections will have little of significance, comparatively, from a national viewpoint.

What New High Records Mean

A GOOD deal has been heard recently concerning records. In almost every district some company or individual works has surpassed its previous high tonnage for March. But with the advent of later days is bound to come a letdown—a logical letdown, because there can be no mountains without some valleys.

A record always presupposes propitious circumstances. Never has a transatlantic liner earned the right to lash a broom to the forepeak without the assistance of a favorable wind or the current of the Gulf Stream, or the chill of northern waters for more efficient condensing. The tracks usually have been cleared when a crack passenger train sets a faster pace. Intercity automobile records are made at night, when traffic is lightest.

Just so with iron and steel. March is the month for records. The only other 31-day month in the calendar without a holiday is August, and the dog days are no time for speeding up production.

Trade conditions incline favorably in March. Consumers are giving thought to spring work. Structural steel specifications denote the approach of more favorable building weather. The sheet and wire mills reflect the outdoor work in sight, especially in rural districts. The railroads are pressing for track material for their spring programs. There is a stirring everywhere.

Sales departments frequently frown upon these supreme efforts. Perhaps the mills hold back some of the heavier specifications from February. Some tonnage that normally would be rolled in April may be moved up. The eyes of the sales departments see singly, preferring to satisfy all

customers to setting a mark to be shot at next year.

But there is something in establishing a record that appeals to the sporting instinct. From superintendent down to the rawest mill hand pride of achievement is stimulated; all feel that they have made a personal contribution; there is a mental glow in the consciousness that something never done before has been accomplished. Probably best of all, individual capacity has been expanded and the day's work hereafter comes easier.

Congress Again Talks Coal

WITH somewhat belated interest, a number of members of congress have become inclined seriously toward speeding legislation to stabilize the coal industry and to prevent recurrences of strikes, with an eye on the expiration of the Jacksonville bituminous wage agreement on March 31, 1927. Recommendations to deal with the coal industry's problems, as contained in the Hammond coal commission report, have been before congress since September, 1923 but it remained for evidences of coal profiteering since the anthracite strike finally to bestir a demand for action.

While the setting up of additional bureaucracies and commissions in Washington to meddle with industry is not to be recommended, nevertheless, a situation has developed in the coal industry, generated largely by chaotic conditions in bituminous operations, which raises a real need for some kind of preventive action.

It is doubtful that any sound legislation can be passed at this session. In its zeal to ward off possible future complications to the industrial and domestic fuel users because of strikes, congress should not be led to enact a poorly digested coal control measure to deal with a situation that has so many deep-seated ills.

Some sort of fact-finding organization, to give publicity to profits, price economics, affairs in the union and in the industry, should be set up, with possible control of the industry by the government in case of emergency. Nevertheless, such problems as freight rates and markets need to be given serious thought, and much intensive study on this subject is not likely to be produced at this session of congress.

Sentiment Shows Some Improvement

BUSINESS confidence has been put to a severe test the last few weeks. A combination of developments including the Wall street crash, lower commodity prices, adverse weather and extreme buyers' caution, has tended to unsettle sentiment throughout the country. By far the most potent factor in this was the collapse of stock market values. Business, rightly or wrongly, is prone to take its cue on the outlook from Wall street. Plunged in a torrent of liquidation brought on by its own unreasoning speculative inflation, Wall street naturally was steeped in dark forebodings for all things. This viewpoint was communicated to the country and had its effect. A saner attitude now is gaining ground.

A careful checking over of fundamental conditions fails to disclose any serious defects which would lead to a debacle in business like that in stocks. Prices have not been inflated, inventories are moderate and the rein of conservatism has been held taut over industry for months. Moreover, the records of activities in iron and steel, in building and in the automobile trade since the first of this year show new high marks, and no signs of depression. These considerations are bringing about some improvement of sentiment, extending even to Wall street itself, where greater stability has appeared. From present indications a fair degree of business activities will be witnessed during the spring months, after which the summer relaxation similar to that of the three preceding years may appear.

What Our Readers Are Thinking

Why Organize for Safety?

THE instinct of self preservation is not enough in this busy age to keep us from accidents.

Here is a reasonable question: "Since it is necessary to have safety proclaimed and preached, and to organize for safety, what are the things that will bring it about in a plant?" Someone who works in a plant amid the roar of machinery may say: "Why, the first thing is to safeguard machinery." And that is a good beginning.

When safety work was started in the Carnegie Steel Co., I was working in our Edgar Thomson Works, at Braddock. I remember a safety inspector came into that plant and looked over all the machines and the different hazards; and then he wrote out a report recommending certain things to be done, machinery to be covered, railings to be put up, and other measures to safeguard the employes from accidents. He turned in 3500 recommendations for that plant.

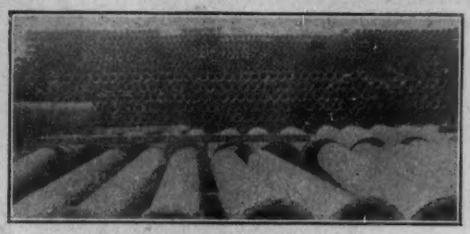
If the machinery in any shop is not safeguarded, I would say that the management is not interested in safety. To safeguard the gears on the machines in a shop is a silent testimony to the men. It is a witness, day by day, to everyone employed there that those at the head of that shop are interested in safety. Yes, let us have safeguarding. Let us safeguard every dangerous piece of machinery, but after we have done that, what? Our experience, and I know it has been your experience, shows that it will reduce accidents less than 50 per cent. —JOHN A. OARTEL, *chief of safety bureau, Carnegie Steel Co., in an article in National Safety News.*

The Reader's Page

Vol. LXXVIII, No. 15 IRON TRADE REVIEW April 15, 1926

Making Centrifugal, Refractory-Cast Pipe

FURTHERANCE of the comparatively new process of making centrifugal cast iron pipe in refractory molds is of considerable economic importance, and therefore the article on page 999 in this issue of IRON TRADE REVIEW is timely and informative. The article describes a new plant built by the American Cast Iron Pipe Co. at Birmingham, Ala., for the manufacture of pipe by the centrifugal process. The method employed in the new plant has been adapted to large production requirements. The article shows how by spinning molten metal in refractory lined molds pipe with a high degree of strength is obtained. Technical and economic factors are considered. Pipe produced by this process shows relatively higher physical properties than sand cast, thus a pipe of lighter weight will meet the specifications demanded in service.



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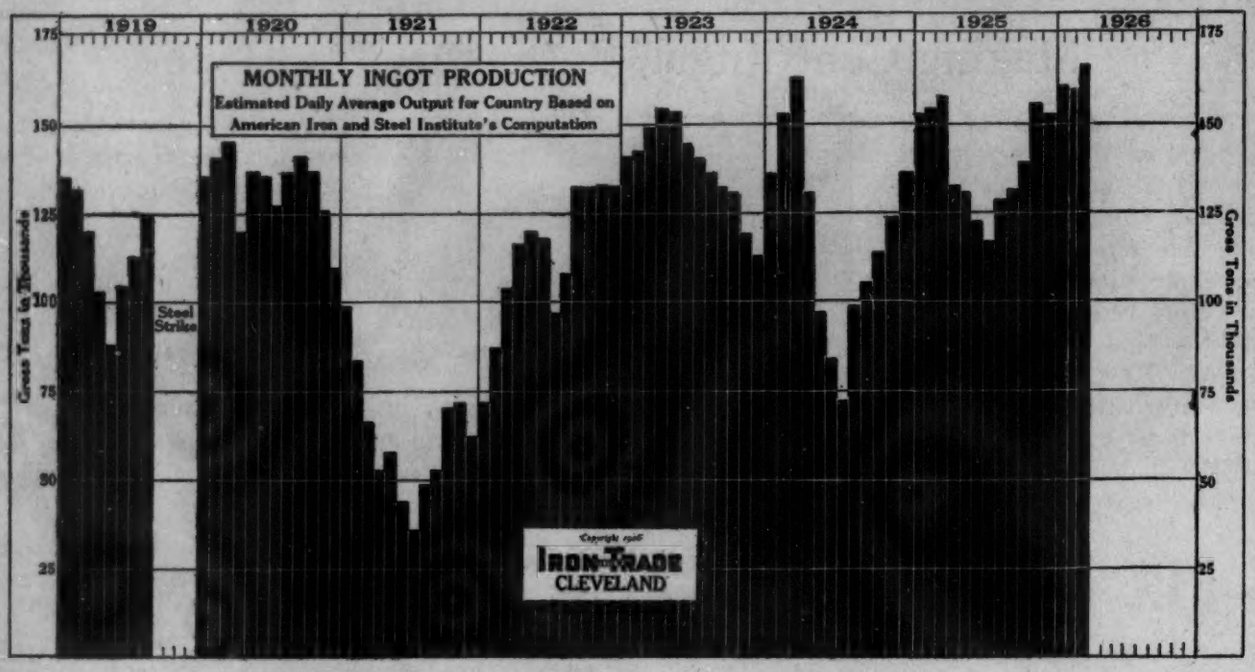
The Business Trend



First Quarter Business on High Level

By JOHN W. HILL, Financial Editor

WITH the unfolding of important records of business over the first quarter of 1926, new light is shed upon the course of trade during that period. Although the period was marked by considerable uncertainty and downright pessimism, it is now seen that industry since the first of the year has been indulging in its record-breaking proclivities with undiminished vigor.

THIS is the undisputed testimony of most all of the important measures of trade. They tell of unprecedented volumes of goods in process of production and distribution. Steel output, building construction, automobile production, freight car loadings, bank clearings and mail order sales all give the same evidence.

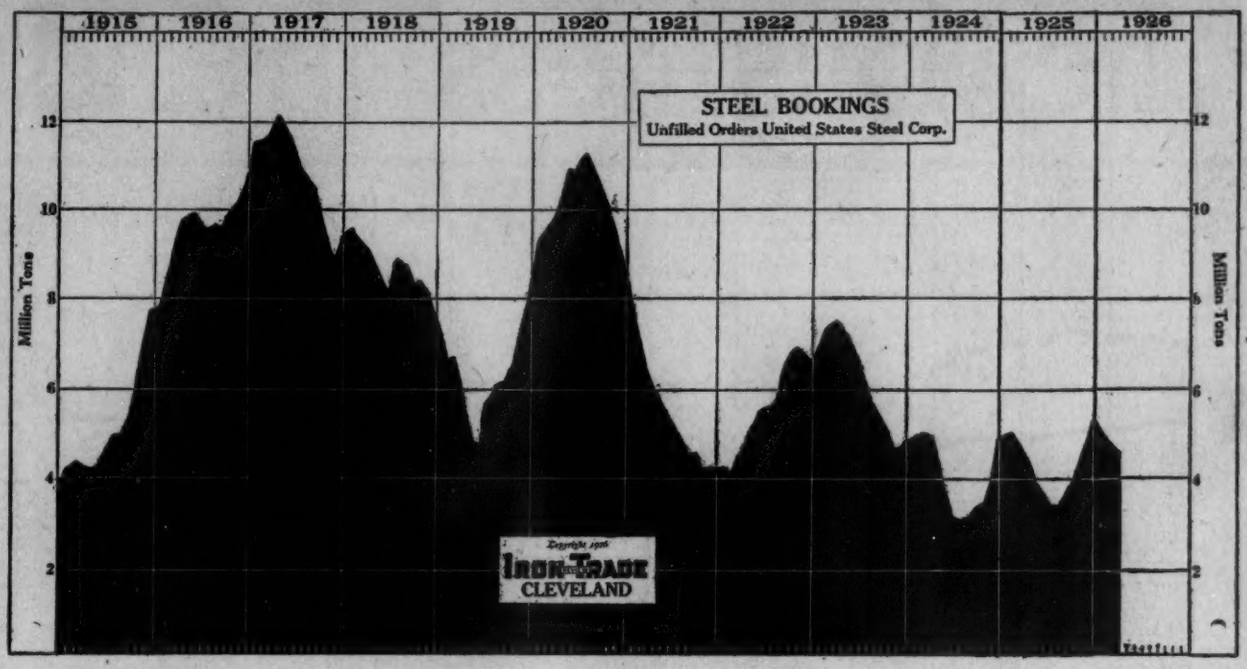
AS SHOWN by the accompanying chart the country's steel works in March made a new high record for all time. With a daily average output of 166,359 tons the previous peak of 161,482 tons in March, 1925 was outstripped. The rate of production of steel ingots over the first three months exceeded that of the corresponding period one year ago.

THE call for such enormous quantities of steel came from the great steel consuming industries such as building, automobiles, railroad equipment and farm implements. Despite innumerable predictions of its recession the building industry came through the first quarter in 1926 with an increase in the value of contract awards of 30 per cent over 1925.

THE automobile industry likewise has sped forward to new records of production. In March, preliminary estimates indicate that 447,000 cars and trucks were produced. This was second only to the great peak month for all time of October, 1925. During the first three months more cars and trucks were made than during any other first quarter in history.

THESE records are sufficient to show that business has been moving at an accelerated pace. Continuation of this rate of activities is unlikely to be maintained indefinitely but it is significant that business has entered the second quarter of the year on a higher basis for some important lines that it did one year ago. Business confidence which was disturbed by the stock market collapse, by lower commodity prices, and by close hand to mouth buying has been somewhat reassured by the exhibit of such record-breaking volumes of actual business.

The Business Trend

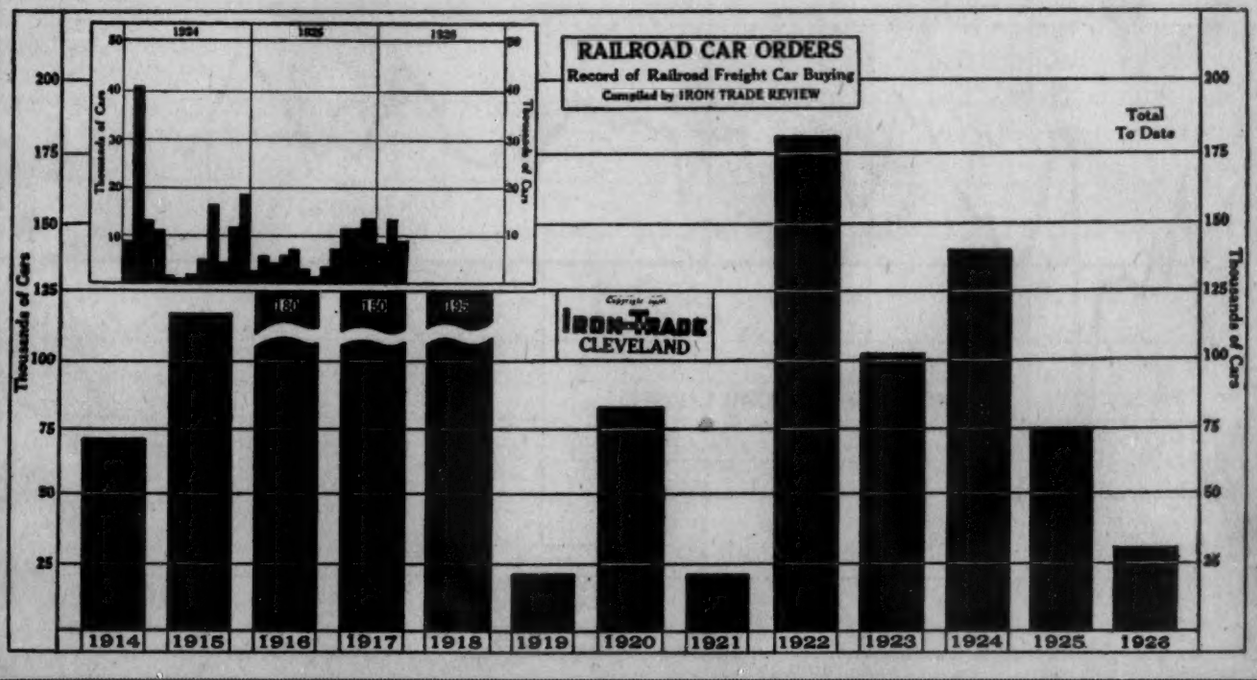


Steel Bookings

MARCH brought a reduction of 236,887 tons in the volume of unfilled orders of the United States Steel Corp. This decline is smaller than that of 265,917 tons reported for February. A somewhat better level of buying than in February is indicated thereby. The reduction reflects the continued high pitch of production and of shipments together with close hand-to-mouth buying. Orders on the books of 4,379,935 tons as of March 31 were 500,000 tons less than one year ago.

Car Orders

RAILROADS have been buying cars in much more numerous quantities than they did one year ago. In March orders for new freight cars amounted to 8995 compared with 12,895 in February. The total for the month, however, was greater than that of 4730 cars ordered during March, 1925. For the first three months of 1926 car orders totaled 30,720 against 11,935 for the first quarter of 1925. With the number of idle cars on the roads exceeding 200,000, the systems have no need to make big purchases.



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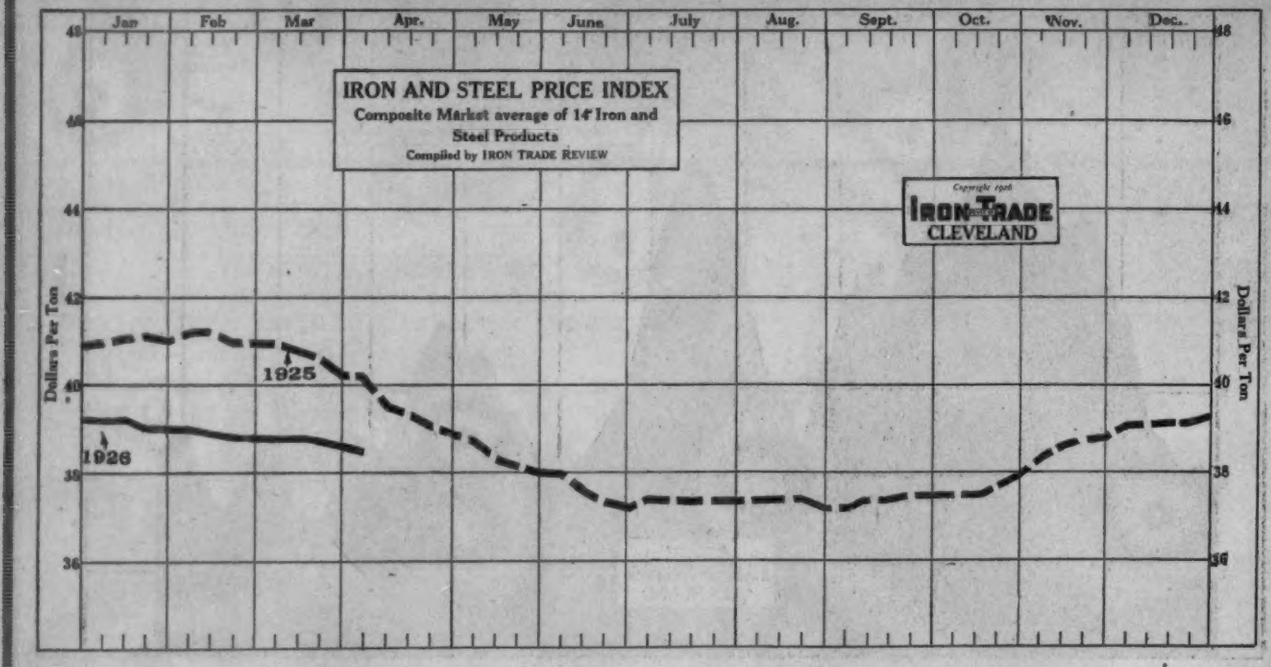
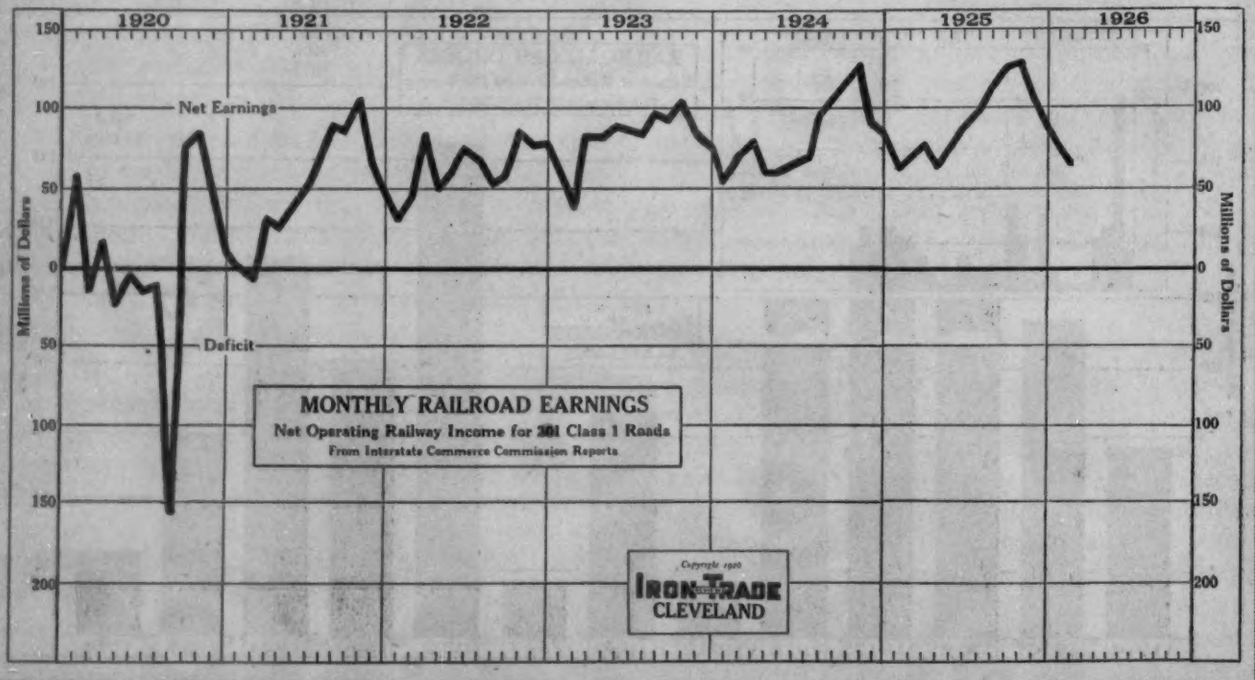


Iron and Steel Prices

IRON and steel prices, as measured by the composite market index of IRON TRADE REVIEW, continue to tend toward lower levels. A further drop in the composite average last week was brought about by the sharp and substantial recession for pig iron. The composite now is on the lowest basis for any time since last November, standing at about $38.50 a ton. It is 46 per cent higher than the 1913 level, compared with 49 per cent higher than the prewar level one year ago.

Railroad Earnings

DURING the first two months of 1926 net income of class one railroads was at the annual rate of 4.60 per cent on their property investment. The rate of return for the first two months of 1925 was 4.67 per cent. For the month of February alone class one railroads had a net railway operating income of $63,289,297 compared with $65,151,053 in February, 1925. Thirty-four class one railroads in February operated at a loss. Of these 16 were in the eastern district, and 17 were in the western district.



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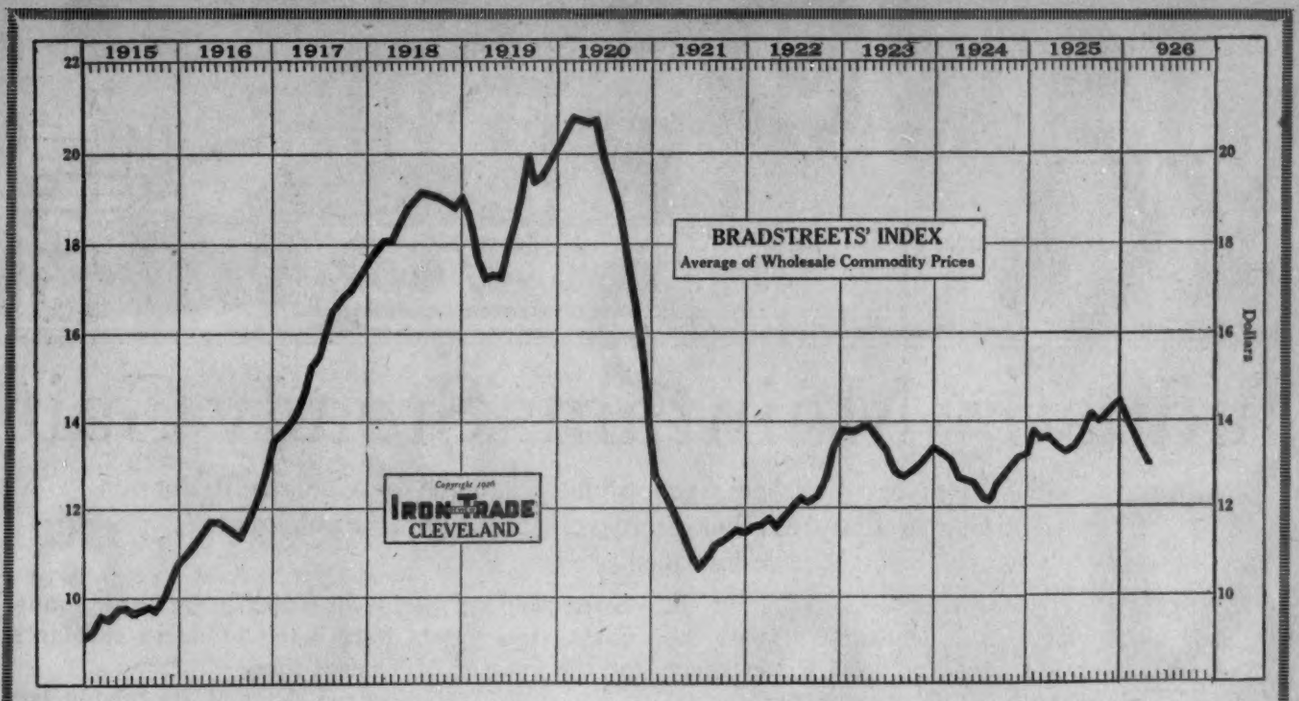
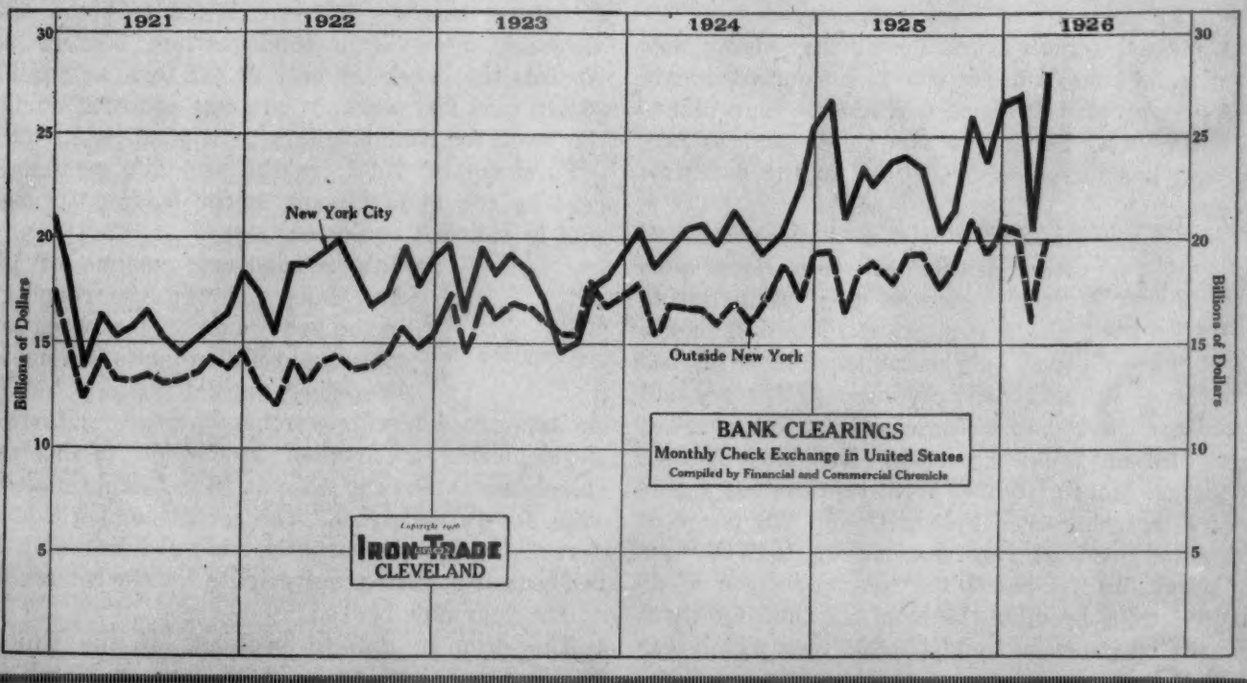


Bradstreet's Prices

ANOTHER downswing in wholesale commodity prices, as measured by Bradstreet's index, occurred in March. This was the fourth consecutive drop for prices and it brought the index to the lowest point touched since October, 1924. The number fell 2.2 per cent during March and it is 9 per cent lower than it was on Dec. 1, 1925. Compared with one year ago a loss of 4.2 per cent in prices is seen. The index is 24 per cent higher than the depression low mark in 1921.

Bank Clearings

RECORD breaking bank clearings are disclosed for March by reports from principal clearing houses of the country. The grand total was $48,505,299,000. This passes the previous peak of last December. It exceeds February by 25 per cent and March, 1925, by 15 per cent. Clearings in New York City showed a gain of 30 per cent over February and of 20 per cent over March one year ago. Outside of New York City exchange of checks was 9.4 per cent above March, 1925. Large stock market transactions helped boost clearings.



Industry Maintains Steady Gait

Inquiry and Orders for Finished Steel Show No Signs of General Reduction —Activity in Plate Market Increases—Steel Ingot Production in March Establishes New Record

IN SPITE of a widespread expectation of an early slackening in the demand for steel, the present situation offers no tangible evidence of general recession. While inquiry for certain finished steel products has fallen off, activity in other lines has increased so that the total volume of new business in prospect shows no appreciable change. Actual bookings likewise are being maintained in most market centers, but in Chicago, where unusually bright conditions have prevailed, the first signs of reaction are appearing in the form of a moderate reduction in new business.

Steelworks operations show little change from last week. The Pittsburgh district is running at from 80 to 85 per cent of ingot capacity, while in Chicago the rate is from 93 to 95 per cent, as compared with a high mark of slightly over 95 per cent during the best period in March. The Steel corporation is understood to be operating at about 97 per cent of ingot capacity.

A survey of the automobile industry shows that no marked change in activity has occurred during the past week. In fact, one of the four manufacturers who have been lagging behind in production has increased operations in the past two weeks.

March Gains Impressive

March statistics have completed the picture of the remarkable record of steel production during the first quarter. The past month not only established the highest monthly total and daily average in history but lifted the three months' aggregate to the greatest figure for any similar period. The daily average output in March, 166,359 tons, represented a gain of 4.9 per cent over February and 2.8 per cent over the previous record mark of 161,796 tons in March, 1924. March's gross production of 4,491,689 tons, brought the total for the first three months of the year to 12,449,828 tons which was 296,501 tons and 2.4 per cent in excess of the corresponding period in 1925. On an annual basis, steel ingots were being produced in March at the rate of 51,800,000 tons.

Active Plate Demand

Improved demand for plates has stiffened the price and in districts where 1.80c, Pittsburgh, was made several weeks ago, 1.90c now is the minimum. Chicago car builders specified 30,000 tons of car steel, chiefly plates. The Roxana Petroleum Corp. will require 26,000 tons for tanks and stills at East Chicago, Ind. About 6000 tons of plates are involved in a San Diego, Calif., pipe line, contract for which has just been awarded. The Baldwin Locomotive Works has placed 7000 tons of plates.

Specifications for sheets are lagging and competition on some grades is more pronounced. Buying of bars also has slackened from the volume maintained in March. Activity in the structural market still is confined to small lots, although more large tonnages are coming up. Awards this week are only 22,481 tons, as against 36,246 tons last week. Contracts awarded during the week for concrete bars total 9520 tons.

Purchase of 2000 freight and 209 passenger cars by the Pennsylvania is the leading transaction in railroad equipment.

Defer Buying Pig Iron

Only a moderate volume of pig iron sales followed the reduction in the valley market last week and subsequent adjustments in some of the other market centers. Many melters are deferring purchases, awaiting further developments. Curtailed production of beehive coke has steadied the price at $3 to $3.25, Connellsville, for furnace fuel. The recent competition in ferromanganese apparently has subsided, with 95 per cent of buyers' requirements for the remainder of the year now booked.

The drop in unfilled bookings of the United States Steel Corp. to 4,379,935 tons on March 31,

a loss of 5.13 per cent from February 28, emphasizes the unusual character of the present situation. In March, 1920, the Steel corporation's unfilled orders neared 10,000,000 tons, yet last month, with production at the highest rate in history, the untouched bookings were less than half that amount. It would be interesting to know the percentage in each of these figures which represents tonnage actually converted into sales.

IRON TRADE REVIEW composite of 14 leading iron and steel products stands at $38.53, as against $38.54 last week when the break in pig iron prices lowered it 32 cents.

Prices, Present and Past

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Apr. 14, 1926	Mar., 1926	Jan., 1926	Apr., 1925
PIG IRON				
Bessemer, valley, del., Pittsburgh	$21.26	22.76	22.76	22.86
Basic, valley	18.50	20.00	20.00	22.20
Basic, eastern del., eastern Pa.	21.75	22.35	22.75	22.60
*No. 2 foundry, del., Pittsburgh	20.76	22.26	22.26	21.96
No. 2 foundry, Chicago	22.00	23.00	23.00	22.60
*Southern, No. 2, Birmingham	22.00	22.00	22.75	20.00
*Southern Ohio, No. 2 Ironton	21.00	21.00	21.40	21.00
**No. 2X, Virginia furnace	23.25	23.00	23.50	23.75
**No. 2X, eastern del. Phila	23.26	22.76	24.26	23.16
Malleable, valley	19.00	20.50	20.50	20.30
Malleable, Chicago	22.00	23.00	23.00	22.60
Lake Superior charcoal, Chicago	29.04	29.04	29.04	29.04
Gray forge, val., del., Pittsburgh	20.26	21.76	21.76	21.66
Ferromanganese, del., Pittsburgh	92.79	104.79	119.79	119.79
*.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.00	3.15	6.90	3.10
Connellsville, foundry, ovens	4.00	4.45	6.40	3.85
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	36.00	36.00	36.50	37.00
Sheet bars, open-hearth, Pittsburgh	36.00	36.00	36.50	37.00
Billets, open-hearth, Pittsburgh	35.00	35.00	35.50	35.80
Wire rods, Pittsburgh	45.00	45.00	45.00	48.00
FINISHED MATERIAL				
Steel bars Pittsburgh	2.00	2.00	2.00	2.05
Steel bars, Chicago	2.10	2.10	2.10	2.20
Steel bars, Philadelphia	2.32	2.32	2.32	2.32
Iron bars, Philadelphia	2.22	2.22	2.22	2.27
Iron bars, Chicago, mill	2.00	2.00	2.00	2.10
Beams, Pittsburgh	1.90	1.90	1.90	2.05
Beams, Philadelphia	2.22	2.20	2.17	2.32
Beams, Chicago	2.10	2.10	2.10	2.25
Tank plates, Pittsburgh	1.90	1.85	1.90	2.00
Tank plates, Philadelphia	2.22	2.12	2.12	2.32
Tank plates, Chicago	2.10	2.10	2.10	2.25
Sheets, black, No. 28, Pittsburgh	3.25	3.25	3.35	3.35
Sheets, blue anl., No. 10, Pittsburgh	2.50	2.50	2.50	2.55
Sheets, galvanized, No. 28, Pittsburgh	4.60	4.60	4.60	4.50
Sheets, black, No. 28, Chicago	3.50	3.50	3.50	3.65
Sheets, blue anl. No. 10, Chicago	2.65	2.65	2.65	2.75
Sheets, galvanized, No. 28, Chicago	4.75	4.75	4.75	4.75
Wire nails, Pittsburgh	2.65	2.65	2.65	2.80
Wire nails, Chicago	2.70	2.70	2.70	2.90
Tin plate per base box, Pittsburgh	$5.50	5.50	5.50	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	17.00	17.70	18.75	17.00
Heavy melting steel, eastern Pa.	16.00	16.10	17.35	15.50
Heavy melting steel, Chicago	13.75	14.00	14.95	15.00
No. 1 wrought, eastern Pa.	17.75	18.00	18.35	18.40
No. 1 wrought, Chicago	14.25	14.50	15.00	14.60
Rails for rolling, Chicago	16.50	16.50	17.55	15.85

Composite Market Average

The Fourteen Leading Iron and Steel Products Included are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (April 14, 1926)	$38.53
Last week (April 7, 1926)	38.54
One month ago (March, 1926)	38.88
Three months ago (January, 1926)	38.90
One year ago (April, 1925)	39.45
Ten years ago (April, 1916)	39.13
Thirteen years ago (April, 1913)	27.74

Late News Flashes

Plans Dismantling Furnace

New York, April 13.—Replogle Steel Co., Wharton, N. J., is considering dismantling its blast furnace at Oxford, N. J., and is taking bids for that purpose. The furnace, idle since April, 1922, has an annual capacity of 85,000 gross tons and formerly was owned by the Empire Steel & Iron Co.

Davis Addresses Amalgamated

Pittsburgh, April 13.—Secretary of Labor Davis addressed the convention of the Amalgamated Association of Iron, Steel and Tin Workers here yesterday. He advocated free speech, and the granting to communists the rights to air their views but limiting them to changing political conditions by way of the ballot. He warned the association against insidious "labor" movements.

Sheet Mill Operations Higher

Youngstown, O., April 13.—Sheet mills are operating at 86 per cent of capacity compared with 82 per cent a week ago. Some plants are scheduled until the last turn Friday while others have a full week's work. District open-hearth schedules are 3 per cent lower this week than last, 78 per cent of physical capacity being charged. Bar mills are operating about 85 per cent, tin mills 70 per cent and strip mills 90 per cent.

Price McKinney Commits Suicide

Cleveland, April 13.—Price McKinney, retired in May, 1925, as president of the McKinney Steel Co., Cleveland, committed suicide, April 13, at his home in Wickliffe, O. Dominant figure for 20 years in the steel company which bears his family name, Mr. McKinney was instrumental in building up one of the largest independent steel corporations in the United States.

His industrial career was started in Toledo, O., where his early business training was obtained as salesman for Isaac G. Snead & Co., manufacturers of industrial furnaces. He next was associated with the Hocking Valley railroad and affiliated lines. During this time he was in intimate contact with Judge Stevenson Burke of Cleveland, a power in the Hocking Valley and Toledo & Ohio Central railroads. Judge Burke later became interested in the iron and vessel operations of Corrigan, Ives & Co., Cleveland, and when the company was in receivership in 1893 Mr. McKinney was called upon to take charge. From the death of Mr. Corrigan, in 1908, Mr. McKinney exercised full control of the business until his retirement in 1925.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS
4 x 4-inch base

Pittsburgh, open-hearth	$35.00
Pittsburgh, bessemer	35.00
Youngstown	35.00
Philadelphia	40.80 to 41.30
Chicago	35.00
Forging, Pittsburgh	40.00
Forging, Philadelphia	45.30 to 46.30

SHEET BARS

Pittsburgh	$36.00
Youngstown	36.00

SLABS

Pittsburgh	$35.00
Youngstown	35.00

WIRE RODS

Pittsburgh	$45.00
Cleveland	45.00
Chicago	46.00

Standard extras, $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

SKELP

Grooved skelp, Pittsburgh	1.85c to 1.90c
Universal skelp, Pittsburgh	1.85c to 1.90c
Sheared skelp, Pittsburgh	1.85c to 1.90c

Structural Shapes

Pittsburgh	1.90c to 2.00c
Philadelphia	2.12c to 2.32c
New York	2.14c to 2.34c
Chicago	2.10c
Cleveland	2.09c to 2.19c
Birmingham	2.05c to 2.15c

Steel Plates

Pittsburgh	1.85c to 1.90c
Philadelphia	2.22c
New York	2.24c
Chicago	2.10c
Cleveland	2.09c
Birmingham	2.00c to 2.10c

Iron and Steel Bars

Pittsburgh, soft steel	2.00c to 2.10c
Pittsburgh, cold finishing	2.15c to 2.25c
Pittsburgh, forging quality	2.15c to 2.25c
Philadelphia, soft steel	2.32c
New York, soft steel	2.34c
Chicago, soft steel	2.10c
Cleveland, soft steel	2.19c to 2.29c
Birmingham, soft steel	2.15c to 2.25c
San Francisco, soft steel	2.60c
Pittsburgh, refined iron	3.00c to 4.50c
Pittsburgh, reinforcing billet	2.00c to 2.10c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	2.00c
Mill rail steel	1.85c to 1.95c
Philadelphia, common iron	2.22c
New York, common iron	2.24c
Chicago, common iron	2.00c

Hoops, Bands, Strips

Hoops, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh, 6 inches and under	2.50c
Bands, Pittsburgh over 6 in.	2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.30c
Hot rolled strip steel, Chicago	2.50c to 2.60c
Bands, Chicago, under 6 inches	2.60c
Bands, Chicago, 6 in. and over	2.50c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base, Pittsburgh, Cleveland	3.90c
Worcester, Mass	4.05c to 4.15c
Chicago	4.20c

Cold Finished Steel

Cold finished steel bars, drawn, or rolled Pittsburgh, Chicago carloads	2.50c
Less carload	2.75c
Steel shafting turned and polished Pittsburgh, Chicago	2.60c

Screw stock base Cleveland $1 higher; and Worcester $3 higher than Pittsburgh and Chicago.

Hot Rolled Alloy Steel

Pittsburgh or Chicago

S. A. E. Series—

2300	(3½ per cent nickel)	4.60c
3100	(Nickel chromium)	3.60c
6100	(Chrome vanadium)	4.40c
6100	(Chrome vanad. spring)	3.85c
9250	(Silico-mang. spring)	3.25c to 3.40c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relaying rails, Pittsburgh	23.00 to 25.00
Light rails, 25 to 45 mill g.t.	35.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7-16-inch and smaller, Pitts.	2.90c to 3.10c
Spikes, boat and barge, Pitts.	3.25c
Spikes, railroad, Chicago	2.90c to 3.00c
Track bolts, Pitts. standard	3.90c to 4.15c
Track bolts, Chicago	3.90c to 4.15c
Ties plates, Pittsburgh	2.25c to 2.35c
Tie plates, Chicago	2.25c to 2.35c

Wire Products

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base

Wire nails	2.65c
Galv'd nails smaller than 1-inch	4.90c
Galv'd nails, 1-inch and over	4.65c
Plain wire	2.50c
Annealed wire	2.65c
Galvanized wire No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barbed wire, galvanized	3.35c
Polished staples	3.10c
Galvanized staples	3.35c

Coated nails, 100 pound kegs, subject to card of extras Feb. 1, 1926 over regular wire nail base.

Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts. $20.03

Joliet, DeKalb and Waukegan, Ill., and Anderson, Ind., prices $1 per ton over Cleveland-Pittsburgh base on products made there; Chicago $1 higher; Duluth $2 higher and Worcester, Mass., and Fairfield, Ala., $3 higher.

Sheets

SHEET MILL BLACK

No. 28, Pittsburgh, base	3.25c to 3.35c
No. 28, Philadelphia, delivered	3.57c to 3.67c
No. 28, Gary, Indiana Harbor	3.45c
No. 28, Chicago delivered	3.50c

TIN MILL, BLACK

No. 28, Pittsburgh	3.25c to 3.35c
No. 28, Gary base	3.45c

GALVANIZED

No. 28, Pittsburgh, base	4.60c
No. 28, Philadelphia, delivered	4.82c to 4.92c
No. 28, Gary, Indiana Harbor	4.70c
No. 28, Chicago, delivered	4.75c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.50c
No. 10, Philadelphia, delivered	2.82c
No. 10, Gary, Indiana Harbor	2.60c
No. 10, Chicago, delivered	2.65c

AUTOMOBILE SHEETS

No. 22, Pittsburgh, base	4.40c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.50

Gary, Ind., base 10 cents higher.

Long ternes, base	4.85

*This price is subject to quantity differentials established by individual regulations.

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O. to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel	62	50½
1 to 1½-inch, butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less and $4 per ton higher. Chicago delivered 2½ points less and $5 per ton higher.

Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	68½
Charcoal iron, 3¼ to 4½-inch	5
Seamless hot rolled, 3¼ to 3½-inch	46 off

Chain, Piling, Cut Nails

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.30c
Cut nails, c. l., f.o.b. mills	2.80c

Cast Iron Water Pipe

Prices per net ton
Class B Pipe

Four-inch, Chicago	$53.20 to 54.20
Six-inch and over, Chicago	49.20 to 50.20
Four-inch, Birmingham	44.00 to 45.00
Six-inch and over, Birmingham	40.00 to 41.00
Four-inch, New York	56.50 to 57.60
Six-inch and over, New York	51.50 to 52.60

Standard fittings, Birmingham base $110.00, 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B

Nuts and Bolts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Hot pressed square tapped or blank	$4.00 off list
Hot pressed hexagon tapped or blank	$4.40 off list
Cold punched square or hexagon blank	$4.10 off list
Cold punched square or hexagon tapped or blank	$4.10 off list
Cold punched U. S. S. semifinished hexagon nuts ⅝-inch and larger	75, 10 and 5 off
Cold punched U. S. S. semifinished hexagon nuts 9/16-inch and smaller	80, 10 and 5 off
Cold finished S. A. E. semifinished ⅝-inch and larger	75, 10, 10 and 5 off
Cold finished S. A. E. semifinished 9/16-inch and smaller	80, 10, 10 and 5 off

CARRIAGE BOLTS
(⅜ x 6-inch, smaller and shorter)

Rolled thread	50, 10 and 10 off
Cut thread (all sizes)	50 and 10 off
Eagle carriage bolts (Eagle list)	65 and 10 off

MACHINE BOLTS
(⅜ x 4-inch, hot pressed nuts)

Rolled thread	60 and 10 off
Cut thread (all sizes)	50, 10 and 10 off

(All sizes cold punched nuts)

Cut thread	45, 10 and 5 off
Lag screws	60, 10 and 10 off
Plow bolts Nos. 3 and 7 heads	50 and 10 off
All other standard heads	50 and 10 off plus 20 per cent
Tap bolts	30 off
Bolt ends with hot pressed nuts	50, 10 and 10 off
Bolt ends with cold punched nuts	45, 10 and 5 off
Blank bolts	50, 10 and 10 off
Rough stud bolts with nuts (250 pieces or more of a size)	40 and 10 off
Stove bolts, 80, 10 and 5 off plus 2½ off in bulk.	
Tire bolts	60 and 5 off

SEMIFINISHED CASTELLATED AND SLOTTED NUTS

Per 1000, f.o.b. producer's plant, freight allowed

	S.A.E. Castellated	U.S.S. Slotted
¼	$ 4.40	$ 4.40
5/16	5.15	5.15
⅜	6.20	6.60
7/16	7.90	9.00
½	10.10	10.50
9/16	13.80	14.20
⅝	17.00	17.30
¾	28.50	24.00
⅞	36.00	36.00
1	55.50	58.00
1⅛	89.00	89.00
1¼	126.00	131.00
1⅜	183.50	183.50
1½	210.00	210.00

Larger sizes—Prices on application

HEXAGON CAP SCREWS

Milled	80 and 10 off
Upset	80, 10 and 10 off

SQUARE HEAD SET SCREWS

Milled	80 and 5 off
Upset	80, 10 and 5 off

Rivets

Structural rivets, carloads, Pittsburgh and Cleveland	2.50c to 2.60c
Structural rivets, carloads, Chicago	2.75c
**Rivets, 7/16-inch and smaller, Pittsburgh Cleveland	70 and 10 to 70 and 5 off
**Rivets, 7/16-inch and smaller Chicago	70 and 10 to 70 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought c.l., Chicago dist.	$6.30 to 6.40 off
Wrought c.l., Pitts dist	6.50 to 6.55 off
Lock Washers, f.o.b. factory	35 off

Pig Iron

Melters Defer Purchases After Price Reduction—Some Further Adjustments Made —Volume of Sales Moderate

THE price reduction in the valley pig iron market a week ago, which since has spread to other districts, has not developed buying on a large scale, most melters evidently waiting until the market shows more stability. A sanitary ware manufacturer whose purchase of 5000 tons precipitated to drop to $19, valley, has closed for an additional 5000 tons. Foundry sales in the Philadelphia district during the week totaled around 10,000 tons; at New York, 5000 to 7000 tons. Furnace interests with headquarters at Cleveland reported an increase in the aggregate of sales, the total amounting to about 20,000 tons. Cleveland furnace interests have reduced their price to $20, base, furnace, for local delivery to shut out competition from valley furnaces.

PITTSBURGH, April 13.—While the sanitary ware manufacturer which closed last week for 5000 tons of foundry iron has bought an additional 5000 tons for two plants, distributing the orders among four makers at $19 and $19.50, valley, for No. 2 and No. 2X, respectively, other bookings resulting from last week's $1.50 drop in market prices are meager. Most buyers are proceeding cautiously, awaiting further developments.

Several lots of foundry grades involving 100 to 600 tons have been sold at $19, base. A few small lots of malleable brought $19 to $19.50. Two sets of prices also prevail on steelmaking grades. One inquiry for basic involves 2000 tons for a nearby smelter; $18.50 and $19, valley have been quoted. One merchant interest sold a few small lots of bessemer at $20, but $19.50 is quoted in two other directions. Low phosphorus iron remains unchanged in the valley; makers are disinclined to sell even at $28, minimum. Some users have been quoted $28.50 on small lots.

Boston, April 13.—Pig iron sales in the past week are estimated at 5000 tons. Despite low foreign iron prices, at Boston and Providence, several round tonnages have been placed with Buffalo and eastern Pennsylvania producers. The Buffalo market is firm at $21, base, and eastern Pennsylvania producers are on a $22, base, or $25.65, delivered in New England. On moderate tonnages full differentials are being demanded. The foreign iron price range is from $20.50 to $21.50 f.o.b. cars Boston.

New York, April 13.—It is estimated 5000 to 7000 tons of pig iron was sold in this territory in the past week. The New York Air Brake Co. is inquiring for 1000 tons of foundry. The Richardson & Boynton Co. is inquiring for 800 tons. Inquiry generally is quiet, largely because consumers are waiting to see if eastern producers will follow last week's price reduction at Pittsburgh. Eastern producers see no reason for cutting prices here. Eastern prices recently declined $1 without a corresponding change at Pittsburgh. Eastern Pennsylvania foundry iron is $22, base furnace. Buffalo iron is $21, base. Foreign iron is $20.50 to $22, duty paid, tidewater.

Philadelphia, April 13.—Foundry sales are the leading feature of the pig iron trade. However, it appears less than 10,000 tons was placed in this territory in the past week. This includes sales of foreign iron. Low phosphorus iron sales aggregated a few hundred tons. The price break at Pittsburgh had no effect here.

Pig Iron Prices

Prices per gross ton

Bessemer, valley	$19.50 to 20.00
Bessemer, Pittsburgh	21.26 to 21.76
Basic, valley	18.50 to 19.00
Basic, Pittsburgh	20.26 to 20.76
Basic, Buffalo	20.00 to 20.50
Basic, del., eastern Pa.	21.50 to 22.00
Malleable, valley	19.00 to 19.50
Malleable, Pittsburgh	20.76 to 21.26
Malleable, del., Cleveland	20.50
Malleable, Chicago	22.00
Malleable, Buffalo	21.00
Malleable, del., eastern Pa.	23.25 to 23.75
No. IX, eastern del., Phila.	23.26 to 24.39
No. IX, Buffalo	22.50 to 23.50
No. 1 foundry, Chicago	22.50
No. 2 foundry, valley	19.00
No. 2 foundry, Pittsburgh	20.76
No. 2 foundry, Buffalo	21.00
No. 2 foundry, Chicago	22.00
No. 2 foundry, Granite City	23.50 to 24.00
No. 2 foundry, Ironton furnace	20.00 to 20.50
No. 2 foundry, del., Cleveland	20.50
No. 2 foundry, del., Phila.	22.76
No. 2 foundry, N. J., tidewater	23.39
No. 2X, eastern del., Phila.	23.26
No. 2X, east. N. J., tidewater	23.89
No. 2X, foundry, Buffalo, furnace	21.50
No. 2X, eastern del., Boston	25.65 to 26.65
No. 2X, Buffalo, del., Boston	26.41 to 26.91
Continental foundry f.o.b. Boston	20.50 to 21.50
India, 2.25 to 2.75 silicon, delivered cars, Boston	21.00 to 22.00
No. 2 Alabama, Birmingham	22.00
No. 2 Alabama, Cincinnati	25.69
No. 2 Tenn., Birmingham	21.00
No. 2 Tenn., Cincinnati	24.69
No. 2 southern, Philadelphia	27.01 to 28.01
No. 2 southern, Chicago	28.01
No. 2 southern, Chicago (barge and rail)	26.18
No. 2 southern, Boston (rail and water)	27.91 to 28.91
No. 2 southern, Cleveland	27.01 to 28.01
No. 2 Southern, St. Louis	25.42 to 26.42
No. 2X, Virginia, furnace	23.00 to 23.25
No. 2X, Virginia, Phila.	28.17 to 28.42
No. 2X, Virginia, Jersey City	28.54 to 28.79
No. 2X, Virginia, Boston	28.92 to 29.17
Gray forge, eastern Pa.	21.50 to 22.50
Gray forge, val. del. Pitts.	20.26
Low phos., standard, valley	27.50 to 28.50
Low phos., standard, Phila.	24.76 to 27.79
Low phos., Lebanon, furnace	23.00 to 24.00
*Low phos., English	24.26 to 24.76
Charcoal, Birmingham	31.00 to 32.00
Charcoal, Superior, Chicago	29.04

Silvery iron Jackson county, Ohio furnace, 5 per cent $25.50; 6 per cent $26.50; 7 per cent $27.50; 8 per cent $28.50; 9 per cent $30.00; 10 per cent $32.00; 11 per cent $34.00; 12 per cent $36.00; 13 per cent $38.00; and 14 per cent $40.00.

Bessemer ferrosilicon, Jackson county, Ohio, furnace, 10 per cent $34.00; 11 per cent $36.00; 12 per cent $38.00; 13 per cent $40.00; 14 per cent $42.00; 15 per cent $44.00; 16 per cent $47.00; 17 per cent $49.50.

*Duty paid, delivered Philadelphia consumers.

Buffalo, April 13.—Weakness of pig iron prices in other markets has caused Buffalo district consumers to refrain from buying in the hope of getting similar concessions here. Makers insist their base price of $21 is firm. It is difficult to determine whether full silicon differentials are being had on all business. Inquiry is estimated at only a few thousand tons and sales are small.

Cleveland, April 13.— Cleveland producers are determined to keep valley pig iron out of the Cleveland district, and have announced a base price of $20, furnace, equivalent to $20.50, delivered in local switching area. This is 26 cents under the delivered price of valley iron at $19, base, furnace. The break in the market a week ago still is the major subject of discussion and while the concensus of opinion among sellers is that large buying "has been discouraged" total sales show an increase of at least 5000 tons over the week preceding. The tonnage placed on furnace books since the price reduction is around 20,000. Some large buyers are deferring purchases. One user offered to take a sizable tonnage at $18, valley, which was refused. The producer who led the procession to $19 is understood to have taken 15,000 tons, including a large portion of that for the Standard Sanitary Mfg. Co. The majority of sales since then have ranged from a few hundred tons up to 1000 tons. Inquiries pending total around 6000 tons, including three of 1000 tons each. A lake furnace has revised its price to $20.50 base, for delivery in western Ohio and Indiana territory. Copper-free low phosphorus iron has been revised to $27.50 to $28.50, valley. Sales for the week total 1000 tons at $27.50. Jackson county silveries have been marked down $2, the 7 per cent grade now being quotable at $27.50.

Cincinnati, April 13.—Pig iron buying has slowed up considerably in this district and as a result the price situation is easier. While offerings of northern iron at $20, Ironton, are more numerous, $20.50 furnaces still is asked by a leading producer. Sales in the past week did not exceed 5000 tons and inquiry pending is the smallest in recent months. The Hooven-

(*Concluded on Page* 1026)

Coke

Beehive Prices Show More Steadiness—Output Reduced—Furnace Demand Is Small

BEEHIVE coke prices are steadier since Connellsville producers curtailed production in line with reduced demand. Distress tonnages are lacking, and the market is firmer at $3 to $3.25 for the standard furnace grade. Blast furnace purchases are held down to small filling-in tonnages. Foundry demand in general is fairly active.

Pittsburgh, April 13.—Allignment of beehive coke production with consumption is practically complete, leaving little free coke pressing the market. Therefore, distress tonnages are absent, any supplies available below $3 not being strictly standard. It is understood one cargo of such coke for a South American smelter was sold in the past two weeks under $3.

Spot sales of standard coke mostly for nonmetallurgical uses are bringing $3 to $3.20. One at the latter figure, made this morning in the Philadelphia district, involved 400 tons. One or two blast furnaces have bought filling-in tonnages of 1000 tons or more at a time at $3. Foundry coke inquiries are small and few. This grade is bringing in the spot market $4 to $4.75.

Production of coke in the Connellsville region for the week ended April 3 was 180,850 tons, against 187,630 tons the preceding week, according to the *Connellsville Courier*.

Boston, April 13.—Foundry demand for by-product coke holds up well, although the rate of melt in the district is reported slightly lighter. The price of the by-product foundry fuel holds at $12.50, delivered. Books are expected to be opened shortly for second half contracts.

New York, April 13.—The coke market here is quiet, and prices are unchanged.

Detroit, April 13.—Demand for foundry coke continues about normal and the price of $8.50 ovens is unchanged. Domestic coke has been reduced $1.50 to $7, ovens.

Cincinnati, April 13.—Coke shipments are heavy, particularly foundry grades. Producers have good specifications. Lack of blast furnace operations has depressed the furnace fuel market, while warmer weather has slackened the demand for domestic grades. New River foundry coke is offered at $6.50 to $7, ovens, for immediate shipment.

Birmingham, Ala., April 12.—Specifications and new business warrant full operation of by-product coke ovens in this district. Quotations are firm, around $5.50 for the foundry grade. A surplus is noted only at iron and steel plants.

Coke Prices

Beehive, Ovens

Prices per net ton

Connellsville furnace	$ 3.00 to 3.25
Connellsville foundry	4.00 to 4.50
New River foundry	6.50 to 7.00
New River furnace	4.50 to 5.00
Wise county furnace	3.25 to 3.50
Wise county foundry	4.25 to 5.50
Alabama foundry	5.50
Alabama furnace	5.00 to 5.25

By-Product

Foundry, Newark, N. J.; del.	$ 9.59 to 10.75
Foundry, Chicago, ovens	9.75
Foundry, New England, del.	12.50
Foundry, St. Louis	10.00
Foundry, Granite City, Ill.	10.00
Foundry, Birmingham	5.50
Foundry, Indianapolis, del.	10.75

Ferroalloys

Specifications Hold Up Well—Prices Steadier

Pittsburgh, April 13.—Purchases of ferroalloys continue sluggish. Specifications however, keep up well against second quarter contracts and apparently consumption shows no let down, although seasonal decline is expected to develop before the second quarter expires. The $88 figure from one direction on Norwegian ferromanganese marks the minimum on that grade, $90 seaboard base, being the usual price at which domestic tonnage contracts are being billed. Not wishing to add any more tonnage to the books, domestic makers now maintain a $95 nominal quotation. Spiegeleisen is strong on the quoted basis although no new orders are noted. The high-grade material is scarce and there has been some buying of foreign material of late. Shipments of other alloys are uninterrupted against contracts although individual specifications are not large, consumers everywhere making the manufacturers carry the stock burden.

New York, April 13.—Asking prices of ferromanganese range from $85 to $95, duty paid, tidewater. Several moderate size tonnages still are pending, although over 95 per cent of requirements for the remainder of the year are on books, and producers are not expected to take any action which would necessitate further contract readjustments. Several hundred tons of spiegeleisen was sold at $34, furnace, for the 20 per cent grade, in carloads, with $33 on lots of 200 tons or more. It is understood $32 is the lowest price on producers' books. This price applied only to large tonnages.

Special ferroalloys are in steady markets, and so are alloy ores, except wolframite. This grade of tungsten ore has continued down hill rapidly, some material being available almost down to $11 a short ton unit. On the other hand, some is held at $11.65 to $11.75. Speculative conditions in the wolframite market evidently are the cause of weakness, as alloy steels are in a good market. Scheelite recently sold as high as $13 a short ton unit. Ferrotungsten might be had a shade under $1.10 a pound contained, but some asking prices are higher.

Chicago, April 13.—Ferromanganese continues unchanged at $88, seaboard, for the domestic product. Sales the past week aggregate several hundred tons. Spiegeleisen is unchanged at $34, domestic furnace, and is inactive.

W. B. Schiller Resigns as National Tube Co. Head

New York, April 13.—William Bacon Schiller, since August, 1902 president of the National Tube Co., subsidiary of the United States Steel Corp., has resigned from that office, effective April 1. This announcement was confirmed today by E. H. Gary, chairman of the Steel corporation. Mr. Schiller retires to devote his time to private interests, after rounding out 50 years in industry.

His first important position was that of secretary of the Brier Hill Iron & Coal Co. in 1883. From 1886 to 1889 he was treasurer and general manager of the Youngstown Coke Co., Ltd., and the Bessemer Limestone Co. He was general manager of the Monongahela Furnace Co., McKeesport, Pa., from 1889 to 1892 at which time it was consolidated with the National Tube Works Co.

Mr. Schiller then became manager of the Tube company's blast furnaces and steel works and in July, 1899 became manager of the national department of the National Tube Co. just organized. April 1, 1900 he was made assistant first vice president and in March 1901 first vice president, assuming the presidency in 1902.

Announcement of the successor to the presidency of the National Tube Co. is expected to be made at the annual meeting, April 19.

Ferroalloy Prices

†Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resales	$88.00 to 110.00
Ferromanganese delivered Pittsburgh	92.79 to 114.79
Spiegeleisen 19 to 21 per cent domestic furnace or tidewater	33.00 to 34.00
Ferrosilicon, 50 per cent contract freight allowed	85.00
Ferrotungsten standard, per pound contained	1.10 to 1.17
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered	11.00 to 11.50
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	3.25 to 4.00
Ferro-carbon-titanium, car lots, producer's plant, net ton	200.00
Ferrophosphorus, electrolytic, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent material)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23 to 25 per cent, f.o.b. Anniston, Ala., (24 per cent materials)	122.50

†Duty paid.

The Market Section

Plates

Market Is Firmer and More Active—Larger Tonnages Come Out in Chicago District

PLATE prices are firmer, and in some districts where 1.80c, Pittsburgh was applied a few weeks ago 1.90c now appears to be the minimum. The market is more active. Western car builders have specified 30,000 tons of steel, chiefly plates; 26,000 tons of plates are required for oil tank and still work at East Chicago, Ind.

PLATE PRICES, PAGE 1012

Pittsburgh, April 13.—Miscellaneous orders for plates continue to be noted. It is expected that large tonnages will be closed soon by various car builders. Makers are maintaining a price of 1.90c. It is reported that in northwestern Pennsylvania, where eastern plate mills have been competing keenly nothing less than 1.90c is quoted. In Pittsburgh 1.90c is firm and some attractive second quarter tonnages have been booked at that price. The American Bridge Co. received a contract from the Carnegie Steel Co. for four steamboats.

Boston, April 13.—The plate price at Boston is well established at 1.90c, Pittsburgh, or 2.265c delivered, despite a rather slow market.

Cleveland, April 13.—The plate market continues to show strength at 1.90c, Pittsburgh or 2.07c, Cleveland and some observers pronounce it to be the firmest in a year. The run of tonnage is not impressive as to volume but is continuous from many sources and is keeping the mills well supplied. Recent orders for refinery stills for the Texas Co. placed with the mills involve a total of about 600 tons.

Chicago, April 13.—Activity in plates is relatively better than that in other finished lines. Western car builders last week specified 30,000 tons of car steel, chiefly plates. New inquiry for cars calls for 5300 tons of steel. The Roxana Petroleum Corp., St. Louis, will require about 26,000 tons for tanks and stills at East Chicago, Ind. Tank fabricators in the Chicago district are buying plates fairly heavily. The merchant trade is good. Renewed inquiry has come from the Pan Handle field in Texas. Four to six weeks delivery is being given on both universal mill and sheared plates. The market is unchanged at 2.10c, Chicago.

Philadelphia, April 13.—The Baldwin Locomotive Works has placed plates for 75 locomotives with the Bethlehem Steel Co., and for 50 each with the Lukens Steel Co. and Worth Steel Co., each locomotive requiring about 40 tons, and the total figuring up to 7000 tons. New business while not equalling the March average is fair. The market reflects shading in isolated cases, but generally appears firm at 1.90c, Pittsburgh.

It was stated in the Philadelphia plate market report in the April 1 issue of IRON TRADE REVIEW that certain mills had advised their trade that 1.80c base Pittsburgh would be the minimum price after April 1. This was an error; the price should have been 1.90c.

New York, April 13.—Atlantic & Caribbean Navigation Co., 82 Wall street, New York, operating the Red D Line between New York and Venezuela will open bids April 30 on one or two combination passenger and freight vessels.

CONTRACTS PLACED

2150 tons, six 225 x 40 x 9-foot barges and two fueling barges 100 x 18 x 8 feet for the Barrett Line, Cincinnati, to the American Bridge Co.

900 tons, 1,500,000 cubic foot capacity gas holder, for Taunton Gas Light Co., Taunton, Mass., to Stacey Mfg. Co.

750 tons, two barges for the Dillman Egg Case Co., Carruthersville, Miss.; steel hull for sand and gravel dredge for the West Virginia Sand & Gravel Co., Charleston, W. Va.; and a diesel-driven tug boat for a central American interest, all awarded the Midland Barge Co., Midland, Pa.

630 tons, pipe line, Taft, Calif., for Western Water Co., to Steel Tank & Pipe Co.

600 tons, lock-bar pipe line, San Diego, Calif.; to Western Pipe & Steel Co.

500 tons, diesel engine towboat for Clyde Paden, Sardis, O., and a similar boat for the Dravo Contracting Co., both to the Dravo Contracting Co.

350 tons, 30-inch pipe for Spokane, Wash., to Beall Steel Tank & Pipe Co. on a bid of $28,369.

320 tons, pipe line, Spokane, Wash., to Steel Tank & Pipe Co.

225 tons, elevated tanks at Pottsdam, N. Y., 150 tons, and at Parkersburg, W. Va., 175 tons, to the Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

26,000 tons, tanks and stills at East Chicago, Ind., for Roxana Petroleum Corp., St. Louis; pending.

2500 to 3000 tons, three towboats and 15 barges for the Upper Mississippi River Barge Line Co.; bids about to be asked.

1000 tons, unidentified water line for Kansas City, Mo.; pending.

125 tons, Thermalito Irrigation district, Oroville, Calif.; bids in April 19.

Tonnage unstated, the Atlantic & Caribean Navigation Co., 82 Wall street, New York; bids open April 30 on one or two combination passenger and freight vessels.

Semifinished

More Inquiries for Material Expected This Month—Many Consumers Covered

THE majority of consumers of sheet bars, billets and slabs who obtain their supplies from valley mills have closed for second quarter on a basis of $36 for sheet bars, and $35 for standard billets and slabs. March specifications placed with Pittsburgh mills are sufficient to carry buyers through April. The market is quiet, and prices unchanged.

SEMIFINISHED PRICES, PAGE 1012

Pittsburgh, April 13.—Users of semifinished steel specified late in March so heavily on first quarter tonnages that some of them have enough steel to last throughout April. Makers expect that within the next two weeks some attractive inquiries will come out for billets, slabs and sheet bars. Some of the strip steel makers maintain steady operations and are going ahead on second quarter contracts arrangements, filing specifications every few days. The price on 4 x 4-inch rerolling billets still is $35, and the sheet bar price is unchanged at $36. In the case of small billets it is difficult to obtain even $1 differential over the price of 4 x 4-inch, to say nothing of the larger price differentials which once were obtainable. Several fair size forging billet specifications come in each week against $40 contracts. Wire rod contracts have been taken at $45 and the specifying rate is fair. Skelp is dull and inactive at 1.90c.

Philadelphia, April 13.—Billet sales continue restricted to small prompt tonnages at $35 to $36, Pittsburgh, for rerollers and $40 to $41 for forging quality.

Youngstown, O., April 13.—Semifinished prices remain steady. Sheet bars and small billets are quoted at $36, Youngstown, two additional contracts covering second quarter requirements having been signed this week. Some consumers of sheet bars are buying in the open market, foregoing the usual custom of contracting. Standard slabs and billets are quoted at $35, Youngstown. Tonnages are being specified as orders for finished material demand.

Cleveland, April 13.—The market for sheet bars, billets and slabs is quiet, as most of the large users have arranged for second quarter tonnages. A Cleveland mill interest continues to quote $36, valley, on sheet bars, and $35 on standard billets and slabs.

The Marting Iron & Steel Co., is to re-establish facilities for loading pig iron on barges for river transportation at Ironton, O.

Iron and Steel Scrap Prices

Corrected to Tuesday Noon. Gross Tons Delivered to Consumer

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$13.00 to 14.00
Boston (dealers)	11.00 to 11.50
Buffalo	15.75 to 16.25
Buffalo, No. 1	16.50 to 17.00
Chicago	13.50 to 13.75
Cincinnati (dealers)	12.00 to 12.50
Cleveland, No. 1	14.00 to 14.50
Cleveland, No. 2	13.00 to 13.50
Detroit	13.00 to 13.50
Eastern Pennsylvania	16.00 to 16.25
Bethlehem delivery	15.50
New York (dealers)	11.50 to 12.00
Pittsburgh	17.00
St. Louis	13.00 to 13.50
Valleys, No. 1	17.00
Valleys, No. 2	15.00 to 16.00

COMPRESSED SHEETS

Buffalo	14.75 to 15.25
Chicago	11.75 to 12.25
Cleveland	13.50 to 14.00
Detroit	11.25 to 11.75
Pittsburgh	15.00 to 15.50
Valleys	15.50 to 16.00

BUNDLED SHEETS

Buffalo	13.50 to 14.00
Cincinnati (dealers)	8.50 to 9.00
Cleveland	11.50 to 12.00
Eastern Pennsylvania	13.50
Pittsburgh	14.00 to 14.50
St. Louis	8.50 to 9.00

SHEET CLIPPINGS, LOOSE

Chicago	8.00 to 8.50
Cincinnati	7.50 to 8.00
Detroit	6.75 to 7.25

STEEL RAILS, SHORT

Birmingham	14.00 to 15.00
Buffalo	17.00 to 17.50
Chicago	17.75 to 18.25
Cincinnati (dealers)	17.00 to 17.50
Cleveland (over 6 ft.)	15.00 to 16.00
Detroit	16.00 to 16.50
St. Louis	17.00 to 17.50

STOVE PLATE

Birmingham	14.00 to 14.50
Boston (consumers)	13.50 to 14.00
Buffalo	15.00 to 15.50
Chicago	15.75 to 16.00
Cincinnati (dealers) (net)	8.50 to 9.00
Cleveland	13.00 to 13.50
Detroit (net tons)	13.25 to 13.75
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.25 to 10.75
Pittsburgh	13.50 to 14.00
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	18.50 to 19.00
Cincinnati (dealers)	16.50 to 17.00
Eastern Pennsylvania	20.00 to 21.00
Pitts. billet and bloom crops	21.50 to 22.00

SHOVELING STEEL

Chicago	13.50 to 13.75
Pittsburgh	12.50 to 13.00
St. Louis	13.00 to 13.50

KNUCKLES, COUPLERS, SPRINGS

Chicago	17.25 to 17.75
Eastern Pennsylvania	19.00 to 21.00
Pittsburgh	19.00
St. Louis	14.75 to 15.25

FROGS, SWITCHES, GUARDS

Chicago (cut)	15.00 to 15.50
Eastern Pennsylvania	16.00 to 16.50
St. Louis	14.75 to 15.25

ANGLE BARS—STEEL

Buffalo	16.50 to 17.00
Chicago	16.00 to 16.50
St. Louis	14.50 to 15.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.00 to 13.00
Boston (dealers)	13.00 to 13.50
Buffalo, No. 1	14.00 to 14.50
Buffalo, No. 2	15.50 to 16.00
Chicago, No. 1	14.25 to 14.75
Chicago, No. 2	13.50 to 14.00
Cincinnati, No. 1 (dealers)	9.00 to 9.50
Cleveland, No. 1	13.50 to 14.00
Eastern Pennsylvania	17.50 to 18.00
New York, No. 1 (dealers)	14.50 to 15.00
Pittsburgh, No. 1	13.00 to 13.50
Pittsburgh, No. 2	17.00
St. Louis, No. 1	13.00 to 13.50
St. Louis, No. 2	13.00 to 13.50

WROUGHT PIPE

Boston (dealers)	11.50 to 12.00
Buffalo	15.00 to 15.50
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.25 to 12.75

YARD WROUGHT

Boston	12.00 to 12.50
Eastern Pennsylvania	16.50 to 17.00

BUSHELING

Buffalo	14.75 to 15.25
Chicago, No. 1	12.25 to 12.75
Chicago, No. 2	8.75 to 9.25
Cincinnati, No. 1 (dealers)	9.00 to 9.50
Cleveland, No. 1	11.75 to 12.25
Cleveland, No. 2	11.25 to 11.75
Eastern Pennsylvania	14.00 to 15.00
Pittsburgh, No. 1	14.50
St. Louis, No. 1	11.50 to 12.00

MACHINE SHOP TURNINGS

Birmingham	8.00 to 8.50
Boston (chemical)	9.00 to 9.50
Buffalo	11.50 to 12.00
Chicago	9.50 to 10.00
Cincinnati (dealers)	7.50 to 8.00
Cleveland	11.00 to 11.50
Detroit	9.75 to 10.25
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.00 to 10.25
Pittsburgh	12.50 to 13.00
St. Louis	7.00 to 7.50

CAST IRON BORINGS

Birmingham (chemical)	15.50 to 16.50
Birmingham (plain)	8.00 to 8.50
Boston (chemical)	11.00 to 11.25
Boston (dealers)	8.50 to 9.00
Buffalo	13.00 to 13.50
Chicago	11.25 to 11.75
Cincinnati (dealers)	8.00 to 8.50
Cleveland	11.25 to 11.75
Detroit	9.50 to 10.00
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania (chem.)	15.50 to 16.00
New York (dealers)	9.25 to 10.25
Pittsburgh	12.50 to 13.00
St. Louis	10.50 to 11.00
Valleys	12.50 to 13.00

MIXED BORINGS AND TURNINGS
For blast furnace use

Boston (dealers)	8.00 to 8.50
Buffalo	12.50 to 13.00
Cincinnati (dealers)	7.50 to 8.00
Cleveland	11.25 to 11.75
Detroit	9.50 to 10.00
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.75 to 10.25
Pittsburgh	12.50 to 13.00

PIPES AND FLUES

Chicago	12.00 to 12.50
Cincinnati (dealers)	8.00 to 8.50
Cleveland	11.00 to 11.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Cleveland	13.50 to 13.75
Eastern Pennsylvania	14.50
New York (dealers)	11.25 to 11.75
St. Louis	13.00 to 13.50

FORGE FLASHINGS

Boston (dealers)	9.50 to 10.00
Buffalo	13.00 to 13.50
Chicago	10.00 to 10.50
Cleveland (under 10 in.)	12.00 to 12.50
Cleveland (over 10 in.)	12.00 to 12.50
Detroit	9.25 to 9.75
Pittsburgh	14.00 to 14.50

FORGE SCRAP

Boston (dealers)	9.50 to 10.00
Chicago	18.00 to 18.50
Eastern Pennsylvania	14.50 to 15.00

ARCH BARS AND TRANSOMS

Chicago	22.50 to 23.00
St. Louis	20.50 to 21.00

Iron Steel Works Scrap

AXLE TURNINGS

Boston dealers	$9.50 to 10.00
Buffalo	14.50 to 15.00
Chicago	14.50 to 15.00
Cleveland	13.75 to 14.25
Eastern Pennsylvania	14.50
Pittsburgh	15.00 to 15.50
St. Louis	9.00 to 9.50

STEEL CAR AXLES

Birmingham	18.00 to 19.00
Boston (shipping point)	18.00 to 18.50
Buffalo	16.50 to 17.00
Chicago	19.50 to 20.00
Cleveland	17.50 to 18.00
Eastern Pennsylvania	24.00 to 25.00
Pittsburgh	22.00 to 22.50
St. Louis	20.00 to 20.50

SHAFTING

Boston (shipping point)	17.50 to 18.00
Chicago	19.75 to 20.25
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	17.50 to 18.00
St. Louis	16.25 to 16.75

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 16.50
Boston (consumers)	17.50 to 18.00
Buffalo, iron	15.50 to 16.00
Buffalo, steel	16.50 to 17.00
Chicago, iron	16.75 to 17.25
Chicago, steel	18.00 to 18.50
Cincinnati	12.00 to 12.50
Eastern Pennsylvania	18.00 to 18.50
New York iron (dealers)	14.50 to 15.00
Pittsburgh, iron	17.00 to 17.50
Pittsburgh, steel	18.50 to 19.00
St. Louis, iron	16.00 to 16.50
St. Louis steel	17.00 to 17.50

NO. 1 CAST SCRAP

Birmingham, cupola	17.00 to 18.00
Boston	19.00 to 19.50
Buffalo	15.50 to 16.00
Chicago, No. 1 machinery	18.75 to 19.25
Chicago No. 1 railroad or agricultural	17.75 to 18.00
Cincinnati No. 1 Machinery cupola (net tons dealers)	18.00 to 18.50
Cleveland, cupola	17.25 to 17.75
Detroit (net tons)	14.75 to 15.25
Eastern Pennsylvania, cupola	18.00 to 18.50
New York, cupola (dealers)	15.00 to 15.50
Pittsburgh, cupola	17.00 to 17.50
San Francisco, delivered	20.00 to 21.00
Seattle	17.00
St. Louis, railroad	15.50 to 16.00
St. Louis, agricultural	16.00 to 16.50
St. Louis, machinery	18.50 to 19.00
Valleys	17.50

HEAVY CAST

Boston	17.50 to 18.00
Buffalo (breakable)	14.50 to 15.00
Cleveland	13.00 to 13.25
Detroit (Automobile) (net tons)	19.50 to 20.50
Eastern Pennsylvania	16.50 to 17.00
New York (dealers)	14.00 to 14.50
Pittsburgh	15.00 to 15.50

MALLEABLE

Boston, railroad	19.50 to 20.00
Buffalo	21.00 to 22.00
Chicago, agricultural	16.50 to 17.00
Chicago, railroad	17.50 to 18.00
Cincinnati, railroad (dealers)	15.00 to 15.50
Cincinnati, agricultural (dealers)	14.50 to 15.00
Cleveland, agricultural	18.00 to 18.50
Cleveland, railroad	19.00 to 19.50
Detroit	14.75 to 15.25
Eastern Pennsylvania, railroad	17.00 to 18.00
Pittsburgh, railroad	18.50 to 19.00
St. Louis, agricultural	13.50 to 14.00
St. Louis, railroad	15.50 to 16.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	$15.00 to 16.00
Boston (dealers)	12.50 to 13.50
Buffalo	17.00 to 17.50
Chicago	16.25 to 16.75
Cleveland	17.00 to 17.25
Eastern Pennsylvania	17.00 to 18.00
New York	14.00 to 14.50
Pittsburgh district	19.00 to 19.50
St. Louis	15.50 to 16.00

LOCOMOTIVE TIRES

Chicago, No. 1	18.50 to 19.00
Chicago, cut	18.00 to 18.50
St. Louis, No. 1	16.75 to 17.25

LOW PHOSPHORUS PUNCHINGS

Chicago	17.00 to 17.50
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	20.00 to 20.50

Scrap

Prices Continue to Decline Slowly as Demand Lacks—Contract Deliveries Good

SLOW recession of prices for iron and steel scrap continues, quotations in many cases being nominal in the absence of trading. Consumers are able to maintain their attitude of indifference in the face of large consumption. Supplies are large and weigh down the market. Faith in the market is shown by the action of some dealers to take heavy tonnages.

Chicago, April 13.—Iron and steel scrap continues to work down by easy stages. Heavy melting steel has lost 25 cents at the top and is now $13.50 to $13.75. Sales to melters have been made at $13.75, and dealers have bought at $13.50. Trading even among dealers is of small proportions and dealers are working on narrower margins, as witnessed by the 25c spread on steel Compared with a week ago, the market may be said to be off 25 cents on the average, with the market wholly a buyers' and no immediate prospect of a reversal.

Boston, April 13.—Trading in iron and steel scrap at Boston shows more life. Cotton ties are in good demand at $10 shipping point. A Worcester, Mass., consumer has taken several cars of skeleton scrap at $12.50 delivered. Several cars of wrought iron pipe were taken by a Connecticlut consumer at $12 shipping point.

New York, April 13.—Notwithstanding prices are unchanged, the scrap market has developed a decidedly easier tone. In all quarters scrap is coming out more freely and it appears likely that on the next purchase lower figures will develop. Notwithstanding the sagging tendency of the market, considerable scrap has recently been bought. One large dealer has purchased close to 40,000 tons of heavy melting steel within the past fortnight.

Philadelphia, April 13.—An eastern Pennsylvania consumer has bought 10,000 to 15,000 tons of heavy melting steel at $16.75 delivered. Otherwise consumer buying has been in scattered lots. Principal activity has been by dealers buying to fill orders. Dealers are paying $15, delivered to Bethlehem and $16 to 16.25 delivered other eastern Pennsylvania points for heavy steel.

Pittsburgh, April 13.—With steel mill operations maintained at a remarkably high rate, the scrap market is perhaps quieter than for several years. Reports of sales of 2000 and 5000 tons of heavy melting steel to interests in this district at $16.75 and $16.50, respectively, are denied, the last sale in this territory having been made at $17. Some mills are offering $16.50 or less but none can be found by dealers to sell at that figure. The heavy melting steel scrap on the Pennsylvania railroad list, it is understood, brought about $17.35.

Youngstown, O., April 13.—Reported sales of heavy melting scrap in this district are positively denied by scrap dealers and consumers. Scrap is dull and outside of shipments against contracts nothing is moving. In face of this lack of interest prices are 25 cents to 50 cents a ton lower, but entirely nominal.

Buffalo, April 13.—Scrap inquiry is increasing, and some sales were made within the past week. Heavy melting steel is reported to have brought $16.50 to $16.75 from Buffalo district melters. A tonnage of ordinary steel would be worth $15.75 to $16, dealers say.

Cincinnati, April 12.—Lack of demand, and the presence of several large railroad lists have weakened the iron and steel scrap market. Dealers have reduced their buying prices 50 cents a ton. The Wheeling Steel Corp. at Portsmouth, O., which has been operating nine open hearth furnaces for several months, will reduce its capacity to five furnaces before the end of this month.

Cleveland, April 13.—Iron and steel scrap continues to move slowly. Some heavy melting steel was placed a few days ago, a consumer taking a fairly good tonnage at a figure understood to be $14.50, delivered.

Detroit, April 13.—No improvement is noted in the iron and steel scrap market. Orders are few and for small tonnages. Large accumulations of scrap by the motor companies feature the present situation. The leading producers here are running at or close to capacity and a record scrap output is in prospect this month.

St. Louis, April 12.—Iron and steel scrap continues dull and lifeless, with the trend of prices lower. Consumers are buying on a hand-to-mouth basis. The only sale of consequence was 2000 to 3000 of heavy melting and shoveling steel to a steel works in the district proper. The price was below that for the previous acquisition by this melter, and incidentally represented a new low on the present retrograde movement.

Birmingham, Ala., April 12.—No change is reported in the iron and steel scrap market and weak quotations of the past four weeks continue. Heavy melting steel is down to $13, perhaps lower. Rerolling rails are in greater demand at $15.

Sheets

Market Is Quiet and Price Situation Easier — Specifications Slower in Developing

SHEETMAKERS are finding it more difficult to obtain specifications, new buying is light, and the market has a quieter, easier tone. Quotable levels are unchanged from a week ago, although keener competition is noted and is tending to undermine the price foundation. Valley mill operations have advanced slightly. High-grade demand is tapering off.

SHEET PRICES, PAGE 1012

Youngstown, April 13.—Sheetmakers find it difficult to persuade contract customers to release specifications for immediate rolling. Prices are withstanding the brunt, although competitive quotations in some districts show signs of unsteadiness. Black tonnage entered by large makers is commanding 3.35c while 3.25c is applying on most of the business placed with the smaller producers who are pressed for immediate rolling. Blue annealed is firm at 2.50c. Demand for this grade is not heavy. Galvanized still is quotable at 4.60c base, although the desire for tonnage is tending to undermine the firmness that has existed for many weeks. Demand for high-grade tonnage is lighter. Prices continue on a 4.40c basis, although strip steel has set up stiff competition which some producers are declining to meet.

Philadelphia, April 13.—Exceptions are reported, but most sheet business is bringing the full market prices. About 50 per cent of second quarter requirements are under contract. Consumers will buy the remainder as needed.

Boston, April 13.—A lull in sheet buying has developed in New England. Prices are unchanged.

Buffalo, April 13.—Sheet demand has improved. Prices are steady, sellers quoting blue annealed at 2.50c, Pittsburgh, and black at 3.35c. Buffalo mill operation is estimated at 80 per cent of capacity.

Pittsburgh, April 13.—Specifications in sheets still lag. Operations are slipping here and there, some of the independent producers averaging only 75 per cent, whereas two or three weeks ago their average was 85 per cent. The American Sheet & Tin Plate Co. keeps approximately 80 per cent of its sheetmaking capacity active.

Several automobile producers have

been cutting down their tonnages. Some medium size orders came through this week for blue annealed and galvanized sheets from railroad car builders, and larger tonnages are expected from this quarter before long. The price situation is practically unchanged, being firm on full finished and blue annealed, less firm on galvanized, and weaker on black. On the latter 3.25c to 3.35c represents the market spread.

Chicago, April 13.—Specifications for sheets, especially the lighter gages, have slowed up but Chicago district makers are expressing no concern. The American Sheet & Tin Plate Co. operated its Gary hot mills 100 per cent in March and a letdown has not yet come. It is said that the tin plate tonnage at Gary in March may be exceeded in April. The Inland Steel Co. is taking advantage of the situation to electrify its No. 2 side at Indiana Harbor, including one jobbing and seven hot mills. The remaining 10 hot mills at Indiana Harbor will be electrified as soon as the No. 2 side is again ready for operation. Meanwhile, this interest is operating its available hot mills at Indiana Harbor and Milwaukee at practically capacity. Chicago district makers say they continue to quote 4.75c Chicago, for galvanized, 3.50c for black and 2.65c for blue annealed.

St. Louis, April 13.—Demand for sheets of all descriptions continues satisfactory. New orders booked since April 1 have been fully up to expectations, and virtually all classes of users have been represented in the buying. Specifications have been held in check by the cold weather. Prices are steady.

Tin Plate

Weather Conditions Unfavorable—Operations Still at High Rate

TIN PLATE PRICES, PAGE 1012

Pittsburgh, April 13.—Unless better weather develops soon, the tin plate mills will be adversely affected. At present the canmakers are making up cans in advance of needs and this has brought good specifications to the tin plate manufacturer. Finished cans, however, are not going out into their usual channels and storage limitations will act as a curb. Continued bad weather will delay planting, and delayed planting may cut down the ultimate consumption of cans. Operations still are high, averaging above 95 per cent, and the open market price is unchanged at $5.50.

Strip Steel

Reports of Shading Fail to Disturb Market

STRIP PRICES, PAGE 1012

Pittsburgh, April 13.—The fact that representative strip plants continue to operate on an 80 per cent average or slightly higher and continue to maintain 3.90c on cold and 2.30c on hot, augurs well for a stabilized market during the remainder of the quarter. Reports of price concessions are so far confined to cold strips from one or two eastern points and from two or three western consuming centers, but this has not caused makers to swerve from their firm price policy. Some of those buyers who claimed ability to buy at lower figures have already signed contracts at the full market levels.

Pipe

Mill BackLogs Continue Heavy —French Interests Take 9100 Tons Cast Pipe in New England

CONTINUED activity of oil country goods buyers enables mills to maintain fair backlogs. Prices are steady. Wrought buying has improved. Cast pipe is featured by award of 9100 tons in New England to French makers. The 28,000-ton project in San Diego, Calif., went lock bar pipe, taking plates. American makers took 2800 tons at Quincy, Mass., despite French low bidders.

PIPE PRICES, PAGE 1012 AND 1046

Pittsburgh, April 13.—Several orders for 10 to 12 carloads of standard full weight merchant pipe from large eastern jobbers, with a fair sprinkling of smaller ones, gives added strength to the tubular goods situation. Mills are operating practically full, with considerable help from backlogs of oil country goods tonnage. New demand for oil country pipe, casing, drive pipe, line pipe, etc., is on the increase. A number of jobbers in the Mid-Continent field are ordering larger tonnages, several taking 10 to 15 carloads apiece, and one this past week ordered 18 to 20 carloads from a Mahoning valley interest. Several attractive line pipe tonnages are up for consideration for southern, western and southwestern installation and the question of obtaining deliveries soon will be more important. Pipe prices are firm. Demand for casing and tubing for gas well drilling in western Pennsylvania and West Virginia is heavy.

Shipments of wrought iron pipe have improved during the last two weeks and the outlook is bright for the entire summer. A. M. Buyers Co. is operating at 75 per cent, and the Reading Iron Co. at slightly above that figure.

Boston, April 13.—Municipal inquiry for cast pipe has subsided for the moment in New England, but private projects appear in good volume. The award of 2800 tons by Quincy, Mass., announced last week to an American maker went domestic despite French interests being low bidders.

New York, April 13.—An award of 9100 tons to B. Nicoll & Co., representing French makers, features the local cast pipe market. Of this total 5100 tons, chiefly 20-inch pipe, is for Holyoke, Mass., and 3000 tons of 4 to 20-inch pipe, principally the larger sizes, for Norwalk, Conn. These sellers also closed on 700 tons in the Far West for Troser, Wash. Newark, N. J., has closed on 1228 tons of high pressure, class E pipe, ranging from 8 to 20-inch, and 66 tons of fittings to the Warren Foundry & Pipe Co.

Except where foreign competition enters, prices on the smaller sizes are firm. One Eastern shop is booked four months on sizes up to 12 inches and in no case are they booked up under three months. Only on the larger sizes of pipe do there appear to be any concessions under pressure of domestic competition.

Chicago, April 13.—Pending business in cast iron pipe is not quite up to the total of that in 1925 but awards for the year to date exceed those of the same period of last year. New business the past few days has not quite equaled shipments. Over the next 10 days bids will be taken on a large total, including 6000 tons at Detroit. Quiet buying of pipe by utilities has been good. Prices range from $41 to $42, Birmingham, or $49.20 to $50.20, Chicago, on pipe 6 inches and over, modified to the extent that on the heavier non-competitive sizes less than $40, Birmingham, has been done. The water project in San Diego Calif., for which 28,000 tons of pipe was sought went back for pipe totaling 6000 tons of plates.

Birmingham, Ala., April 12.—New cast iron pipe lettings are being received in good volume. Spring business is up to expectations. Shipments from shops here equal the make. Good operations are assured for several months ahead. Soil pipe and fittings trade is improving although not as actively as pressure pipe. Prices are steady.

CONTRACTS PLACED

1750 tons, Milwaukee, to United States Cast Iron Pipe & Foundry Co.
739 tons, 24-inch class B pipe, Los Angeles, Spec. 790-B, to American Cast Iron Pipe Co.
746 tons, 685 tons 6 to 10-inch class B pipe, Prosser, Wash., to B. Nicoll & Co. for French pipe, and 81 tons, 12-inch class B pipe.
350 tons, Peoria, Ill., to National Cast Iron Pipe Co.
150 tons, Wausau, Wis., to National Cast Iron Pipe Co.
130 tons, Iron Mountain, Mich., to National Cast Iron Pipe Co.
100 tons, Cambridge, Mass., to R. D. Wood & Co.

130 tons, Lowell, Mass., to local seller.
160 tons, corrugated iron pipe, for United States Engineer's department, Seattle, to Howard-Cooper Corp.
Unstated tonnage, year's requirements, Everett, Mass., to Warren Foundry & Machine Co.

CONTRACTS PENDING

25,000 tons, pipe line, San Diego, Calif.; went lock-bar pipe.
6000 tons, Detroit; bids in.
1440 tons, 30 to 48-inch plain pipe, Milwaukee, United States Cast Iron Pipe & Foundry Co. at $46.90 delivered on bids opened April 8. Tenders included 333 tons of lugged pipe and 122 tons of special castings.
1000 tons, Saginaw, Mich.; bids in.
600 tons, Staunton, Ill.; bids in.
800 tons, Toledo, O.; bids in.
250 tons, Greenville, O.; bids in.
750 tons, Springfield, Ill.; bids in.
188 tons, 10-inch class B pipe, North Sacramento, Calif.; general contract to United Concrete Pipe & Construction Co.

Bolts, Nuts, Rivets

Demand Holds up Well and Rivet Shading Is Less

NUT AND BOLT PRICES, PAGE 1012

Chicago, April 13.—Specifications for bolts and nuts, while showing a seasonal decline from the average of the first quarter, are running ahead of mid-April of 1925. The year to date shows considerable improvement over the corresponding period of last year. Specifications from the automobile industry display no sagging. Western bolt and nut works are operating at the same rate as for most of the first quarter but a tapering off is in sight. Prices are holding on the basis of 50, 10 and 10 off for large machine bolts. The general market on rivets is firm at 2.75c, Chicago, for structural and 70 and 10 to 70 and 5 off for small.

Cleveland, April 13.—Bolt, nut and rivet makers are receiving specifications at a rate which keeps plants operating on a steady basis. Bolts and nuts have been a trifle less active during the past week but substantial backlogs are maintaining production schedules. Prices are firm at 2.60c, base Pittsburgh, on large structural rivets and 50, 10 and 10 per cent off list on large machine bolts.

Iron Ore

Large Ore Tonnage Still Pending—Few Sales Being Made

Cleveland, April 13.—Sales of Lake Superior iron ore in the open market continue of limited proportions, although the aggregate is reported fairly satisfactory. The largest tonnage on which producers have been figuring, involving around 200,000 tons for a St. Louis consumer, still is pending. Vessel rates for the season have not been established, although shippers anticipate there will be no change from the present rate of 70 cents from the head of the lakes.

Bars

March Buying Rate Not Being Maintained—Deliveries Still Deferred—Prices Remain Firm

ALTHOUGH buying of steel bars is not maintaining the March rate during April, and bars have become less prominent than some other finished steel forms, business for second quarter is larger than a year ago. Much buying continues to be small prompt lots. Except in the East prices are firm at established levels. Low stocks are feature of strength.

BAR PRICES, PAGE 1012

Chicago, April 13.—The March pace in heavy finished steel, particularly soft steel bars, is proving too hot for April. Heavy March shipments and seasonal factors which usually operate against April are beginning to be felt. Mills deem the second quarter of last year a fairer gage than the first quarter of this year. On this basis mills are in better position than a year ago and this quarter's business may prove higher. Current specifications about equal shipments, because order books at the end of March about equalled those at the beginning, but incoming business is lighter. Plates, shapes and track material attract more emphasis than bars. Some automobile and parts interests continue at their first quarter rate but the industry as a whole is somewhat slower. Low stocks in consumers' hands are a strong factor. Soft steel bars are unchanged at 2.10c, Chicago.

Bar iron and rail steel bars hold at 2.10c, Chicago. Seasonal demand for rail steel is good, with that for building bars improving.

Boston, April 13.—Bar sales are running well ahead of 1925 at Boston, according to the report of a leading seller. The price is firmly established at 2.00c Pittsburgh. Second quarter contracts are slow and much buying is being done outside of contracts.

Philadelphia, April 13.—Attractive lots of steel bars are bringing out quotations of 1.90c, Pittsburgh but the price on most business is 2.00c, with smaller tonnages at 2.10c.

Pittsburgh, April 13.—Merchant steel bar buyers are largely under contract for second quarter needs but a few have deferred action in this regard, having enough tonnage in stock for present requirements. These are expected to sign up this week, and while some have been holding out firmly against paying 2.00c that is the unchanged market price and some small users are quoted and have paid 2.10c. Cold bar finishers for most part are specifying against second quarter contracts at a rate about equal to first quarter tonnages. Some users are calling for more prompt deliveries than mills can grant, although operating practically full. Refined iron bars are slightly more active. Small orders are more numerous and prices are firm, commencing at 3.00c.

Youngstown, O., April 13.—Consumers of soft steel bars continue to specify meager tonnages and as a result mill schedules are slightly irregular. Hand to mouth buying still is in evidence, prices ranging from 2.00c to 2.10c Pittsburgh, for prompt shipment.

Cleveland, April 13.—Bar tonnage moving to the mills from this territory so far in April shows no signs of a material contraction of consumption, and compares favorably with that for the corresponding period in March. Further contracts for the second quarter are being closed, those falling within the week calling for an aggregate of around 10,000 tons. Prices are very firm, the general figure of 2.00c, Pittsburgh, or 2.19c, Cleveland, being unquestioned by buyers.

Cold Finished Steel

Many Small Orders Form Comfortable Total at Firm Price

Pittsburgh, April 13.—Individual orders for cold finished steel bars are not large but the aggregate represents considerable tonnage. This is indicated by the fact that production keeps up to a 70 or 75 per cent average and finishers generally are satisfied. In some directions automotive demand lags but the encouraging feature is that it has not entirely halted anywhere. The quoted market price, 2.50c, is firm.

Hoops and Bands

Buying Is in Good Volume and Prices Firm—Specifications Heavy

HOOP PRICES, PAGE 1012

Pittsburgh, April 13.—Much of the hot rolled flat business coming to strip makers in this locality, giving them tonnage in excess of last month to the same date, is in hoop and band sizes. Automotive interests and other large users, including some specialty stamping manufacturers, are specifying against contracts and in every case the full market price, 2.50c, is being obtained.

Bethlehem Steel Co. has blown in another blast furnace at Coatesville, Pa., making two active at that point.

Structural Shapes

Orders and Inquiries Are More Numerous Although Mostly Small—Chicago Plans 36-Story Building Taking 15,000 Tons

ACTIVITY in the structural market continues confined to small lots, although more large tonnages are appearing. Inquiry is featured at Chicago with a prospective 36-story office taking 15,000 tons, and 10,000 tons for a New York office building. Mills are operating at a good rate and Pittsburgh makers report further commitments by consumers. Two eastern mills are quoting three to six weeks deliveries. Chicago building permits for the three months ended March were far above the average for the first quarters of the past 5 years.

Plain material prices are steady at 1.90c to 2.00c Pittsburgh equivalents with 2.10c firm at Chicago. Fabricated prices still show a wide range, competition being unusually keen.

STRUCTURAL SHAPE PRICES, PAGE 1012

New York, April 13.—Structural orders are coming out freely, although they include few large tonnages. Several sizable projects are under active negotiation. Railroad activity is evidenced by the placing of several bridges, and one or two new inquiries. Structural shops are operating actively, due in a measure to specifications on back orders. Fabricated material prices continue firm. Steadiness also features plain shape prices, which continue around 1.90c Pittsburgh.

Boston, April 13.—Bids have been received for 1800 tons of structural shapes for the Boston Gas Co. office building, and several other round tonnage jobs are in prospect. Prices on plain material are unchanged at 1.90c Pittsburgh.

Philadelphia, April 13.—Two of the largest eastern shape mills require specifications three to six weeks ahead of delivery date. Prices are steady at 1.80c to 2.00c, Pittsburgh, depending upon the tonnage and circumstances. Structural lettings are more numerous with more projects coming out.

Pittsburgh, April 13.—Large structural shape contracts continue in abeyance locally. Fabricators report an influx of small orders and a large number of jobs are being figured involving 100 to 500 tons apiece. Steel interests report that their customers gradually are committing themselves for second quarter tonnage. The price still is unchanged at 1.90c to 2.00c.

Cleveland, April 13.—Few large tonnages of structural shapes are in the current market. Manufacturers are buying for stock from hand to mouth and specific awards are not numerous. Total placements of plain material are good, but fabricators are not as fortunate as the mills. Competition on fabricated and erected material is keen and prices are weak. Plain material is firm at 2.09c to 2.19c Cleveland or 1.90c to 2.00c, Pittsburgh.

Chicago, April 13.—Chicago building permits in March, totaling $33,976,000, topped those of March, 1925, by more than $6,000,000. The first quarter total of building permits was $77,402,000, compared with $77,781,000 in the opening quarter of 1925. The average of the past five years for the first quarter is $56,000,000. Demand for structural shapes faithfully reflects this condition. Plans will be out shortly for a 36-story office building requiring probably 15,000 tons. The Roxana Petroleum Corp., St. Louis, is expected shortly to place 6000 tons for its East Chicago, Ind., refinery. The quotation is unchanged at 2.10c, Chicago.

The Wabash railroad is in the market for its second quarter requirements of structural shapes and bars, aggregating 400 tons.

Awards Compared

	Tons
Awards this week	22,481
Awards last week	36,246
Awards two weeks ago	13,833
Awards this week in 1925	53,213
Average weekly awards, March	36,528
Average weekly awards, 1926	27,356
Total awards to date, 1925	531,024
Total awards to date, 1926	405,474

CONTRACTS PLACED

2000 tons, Ingraham building, Miami, Fla., to the Virginia Bridge & Iron Co.

2000 tons, addition to Tribune tower, Chicaco for Chicago Tribune, to Duffin Iron Works.

1860 tons, temporary viaduct for private interests, Conowingo, Md., to the McClintic-Marshall Co.

1500 tons, Sears, Roebuck & Co. building at Atlanta, Ga., to Virginia Bridge & Iron Co. B-W Construction Co., 720 Cass street, Chicago, general contractor.

1100 tons, exhibition building No. 8, Philadelphia, to the Austin Co.

1000 tons, Northwestern University stadium, Evanston, Ill., to Hansell & Elcock.

800 tons, two bridges for the Baltimore & Ohio railroad, to the Mt. Vernon Bridge Co.

720 tons, highway bridge in Menard county, Ill., to St. Louis Structural Steel Co.

750 tons, Cooper bridge, Camden, N. J., to the Phoenix Bridge Co.

650 tons, Long Island railroad bridge, Queens boulevard, New York, to the Bethlehem Steel Corp.

590 tons, St. Johns college, Brooklyn, N. Y., to Hinkle Iron Co.

550 tons, Jewish Peoples' institute, Chicago, to McClintic-Marshall Co.

450 tons, John Swett school, Crockett, Calif., to Moore Dry Dock Co.

400 to 500 tons, including the Altoona hospital at Altoona, Pa., and furnace binding at Wellsville, O., to the McClintic-Marshall Co.

400 tons, Jeannes hospital addition, Philadelphia, to McClintic-Marshall Co.

400 tons, store addition for Gimbel Bros., New York, to the Hedden Iron Construction Co.

375 tons, additions to Pacific Telephone & Telegraph Co., Seattle, to Hofius Steel & Equipment Co.

370 tons, store and office building, Far Rockaway, L. I., to the Owego Bridge & Iron Works; David Greenwald, 67 West Forty-second street, New York, general contractor.

350 tons, warehouse for Corn Products Refining Co., Argo, Ill., to McClinticMarshall Co.

350 tons, 13-story office building for Burroughs Wellcom & Co., Inc., 1315 East Forty-first street, New York, to the Hinkle Iron Co.; Fountain & Choate, 110 East Twenty-third street, general contractors.

350 tons, St. Joseph college building, Overbrook, Pa., to McClintic-Marshall Co.

320 tons, hospital, Kingston, Pa., to Jones & Laughlin Steel Corp.

300 tons, school, Tyngsboro, Mass., to Frank T. Lyons Iron Works, Manchester, N. H.

300 tons, American Trust Co. addition, Boston, to New England Structural Co.

300 tons, highway bridge over Rio Hondo, near Los Angeles, to McClintic-Marshall Co.

300 tons, industrial building in New Jersey, to the Pittsburgh Bridge & Iron Works.

300 tons, Elks club, Williamsport, Pa., to the Shippers Car Line Co., Milton, Pa.

300 tons, additional for Fidelity Mutual Life building, Philadelphia, to Jones & Laughlin Steel Corp.

250 tons, State hospital addition, Trenton, N. J., to the American Bridge Co.

250 tons, Olympic theatre, Adams and Fulton streets, Brooklyn, N. Y., to the Drier Iron Works; H. G. Wiseman, 25 West Forty-third street, New York architect.

250 tons, Monongahela Trust Co. building, Homestead, Pa., understood to have been awarded the John Eichleay Jr. Co.

200 tons, Bay Ridge Savings bank, Brooklyn, N. Y., to unnamed fabricator.

200 tons, high school, West Pittston, Pa., to McClintic-Marshall Co.

200 tons, bridge for the Southern railway, to the Virginia Bridge & Iron Co.

200 tons, bridge for the Erie railroad, to the American Bridge Co.

175 tons, alterations and additions to the Plaza hotel, Fifth avenue, New York, to the Easton Structural Steel Co.; George A. Fuller Co., Flatiron building, general contractor.

175 tons, new shops of Gulf, Colorado & Santa Fe railroad at Cleborne, Tex., to Truscon Steel Co.

150 tons, Bank of Marquette, Mich., to Lakeside Bridge & Steel Co.

130 tons, apartment, Jones and Geary streets, San Francisco, to Central Iron Works.

125 tons, armory stable for the 101st Cavalry, Brooklyn, N. Y., to Kues Bros.; the Eastern Construction Co., Brooklyn, general contractor.

101 tons, column supports, 2 Rector street, New York, to the American Bridge Co.; Thompson-Starrett, 250 Park avenue, general contractors.

100 tons, St. Francis Xavier school, President street, Brooklyn, N. Y. to the Alpha Iron Works; W. L. & G. H. O'Shea, 29 Broadway, New York, general contractors.

100 tons, Little Pilchuck river bridge, State of Washington, to Hofius Steel & Equipment Co.

100 tons, Berkeley terminals, Berkeley, Calif.; to Pacific Coast Engineering Co.

100 tons, highway bridge at Decorah, Iowa, to Clinton Bridge Co.

100 tons, Loughrey garage, Pittsburgh, to the

Guibert Steel Co.
100 tons, warehouse for Behrhorst & Sons, Pittsburgh, to the Jones & Laughlin Steel Corp.
Tonnage unstated, McCrory store building, Philadelphia, to McClintic-Marshall Co.
Tonnage unstated, Shrine temple, Des Moines, Iowa, to St. Louis Structural Steel Co. through J. & W. A. Elliott Co., 906 Lumber Exchange building, Minneapolis, general contractor.
10,000 to 12,000 tons, Savoy Plaza hotel, Fifth avenue, New York; erroneously reported in last week's issue as pending. This project was awarded American Bridge Co. in October, 1925.

CONTRACTS PENDING

15,000 tons, estimated, 36-story office building at Adams, Clark and Quincy streets, Chicago. Plans shortly by D. H. Burnham & Co., 160 North La Salle street, Chicago.
10,000 tons, Salmon Towers, Forty-second street, New York; general contract awarded to the C. T. Wills Inc., 286 Fifth avenue; structural award likely next week.
4000 tons, Roosevelt high school, Bronx, New York; pending.
2750 tons, Yakima Irrigation district, Ellensburg, Wash.; bids in April 29.
2500 tons, Chateline hotel, Chicago; Roy F. France, 155 North Clark street, Chicago, architect.
1500 tons, new Statler theater, Buffalo, Hotels Statler Co., Inc.; will take steel bids direct.
1263 tons, bridge for federal aid project 302 A, Bismarck, N. D.; bids in April 22.
1200 tons, building for Commercial Solvents Co., Peoria, Ill.; Stone & Webster, 38 South Dearborn street, Chicago, engineers.
990 tons, bridge for federal aid project 301A, Bismarck, N. D.; bids in April 22.
900 tons, hydroelectric plant, in South Carolina for Phoenix Utility Co., 61 Broadway, New York; pending.
900 tons, second unit of plant for Washington Pulp & Paper Co., Port Angeles, Wash.; pending.
900 tons, arena building, New Haven, Conn.; bids asked.
800 tons, Pennsylvania railroad bridge in Ohio; bids asked.
600 tons, warehouses for Alabama docks commission, Mobile, Ala.; bids in.
500 tons, plant for the manufacture of insulation boards, Camden, N. J.; bids asked.
455 tons, eight steel trusses for bridges for bureau of public works, San Francisco; bids in April 20.
410 tons, armory roof, San Francisco; all bids rejected and new bids will be called for shortly.
350 tons, Frick school, Oakland, Calif.; bids in May 4.
250 tons, repairs to Twelfth street, Pittsburgh; W. S. Rae low bidder on general contract.
250 tons, bridge No. 21, Chartiers creek; bids close April 28 at office of John P. Moore, Allegheny county controller, Pittsburgh.
200 tons, warehouse, Queens, New York; bids asked.
200 tons, St. Stanislaus school, Ozone Park, Long Island, N. Y.; pending.
150 tons, recreation building, Veterans' hospital, Aspinwall, Pa.; bids being taken.
150 tons, First National Bank building, McKees Rocks, Pa.; bids being taken.
150 tons, Peoples National Bank building, Latrobe, Pa.; bids being taken.
150 tons, Brookline school, Pittsburgh; bids close April 15 by board of education.
100 tons, Wilkens school, Swissdale, Pa.; bids being taken.
Tonnage unstated, General Electric Co. buildings at West Philadelphia, Pa.; pending.
Tonnage unstated, Polyclinic hospital building, Philadelphia; pending.

Concrete Bars

Pending Work Increasing Steadily But Awards Remain Light—Road Work Active

DELAY in closing on concrete bar tonnages by large buyers continues. Awards this week are unusually heavy. Pending work is increasing. Road work is more active, and a large tonnage is expected to be placed. Requirements for Pennsylvania alone in 1926 total 26,000 tons. Chicago jobbers expect 15,000 to 20,000 tons to be placed there this month. Prices are steady.

REINFORCING BAR PRICES, PAGE 1012

Chicago, April 13.—Pending work in reinforcing concrete bars is heavier than at this time last year but awards are not quite up to this level. The warehouses expect between 15,000 and 20,000 tons of bars to be placed this month. Considerable road work in the central western states is about to be placed. Billet bars are quoted at 2.60c, Chicago warehouse, and rail steel at 2.00c.

Boston, April 13.—Several small awards during the week have given increased life to the concrete bar market. Active prospects total between 3000 and 4000 tons.

Buffalo, April 13.—A growing tonnage of reinforcing bar business is pending here but contractors are slow in closing for their needs. Mill operation is small in spite of a general anticipation of brisk buying soon. Prices are steady at 2.265c for mill shipment lots and 2.75c for stock lots.

Pittsburgh, April 13.—Awards in concrete bars are relatively small, representing about 25 to 75 tons apiece. Road work is scheduled to take a large tonnage this summer. The price still is 2.00c to 2.10c on billet bars.

Cleveland, April 13.—Sales of concrete bars for the past week were light. Inquiries continue few and small. New billet bars are steady at 2.19c Cleveland or 2.00c Pittsburgh. Rail steel bars are unchanged at 1.80c to 1.90c mill.

Awards Compared

	Tons
Awards this week	9,520
Awards last week	7,675
Awards two weeks ago	5,000
Awards this week in 1925	7,922
Average weekly awards, March	4,548
Average weekly awards, 1926	4,619
Total awards to date, 1925	101,524
Total awards to date, 1926	74,188

CONTRACTS PLACED

2030 tons, pipe line, East Bay Municipal Utility District, Oakland, Calif., to Columbia Steel Corp.
650 tons, sewer, Clason Point, N. Y., to Kalman Steel Co.
600 tons, hospital buildings, Mare Island, Calif., to Barrett & Hilp Co.
600 tons, addition to St. Mary's hospital, San Francisco, to Barret & Hilp Co.
500 tons, loft, Varick street, New York, to Day & Goater.
500 tons, office building, Washington street, Boston, to Concrete Steel Co.
450 tons, University of Chicago stadium, Chicago, to Joseph T. Ryerson & Son Inc. E. L. Scheidenhelm Co., 111 West Monroe street, Chicago, general contractor.
400 tons, building for University of Iowa, Iowa City, Iowa, to Des Moines Steel Co.
300 tons, Grand Rapids Storage & Van Co., Grand Rapids, Mich., to Concrete Steel Co.
250 tons, East Surf street apartment, Chicago, to Olney J. Dean & Co.
250 tons, school at Eighty-second and Lyons, Philadelphia, to Baker Warehouse Co.
240 tons, Edison school, San Francisco, to unnamed jobber.
210 tons, Milwaukee Storage Co. building, Milwaukee, to Calumet Steel Co.
200 tons, Philadelphia Rubber Works building, Philadelphia, to Franklin Steel Works.
200 tons, Ford Motor Co. buildings at Chester, Pa.. to Truscon Steel Co.
175 tons, Jewish peoples institute, Chicago, to Joseph T. Ryerson & Son, Inc.
165 tons, Brach Candy Co. plant, Chicago, to Olney J. Dean & Co.
165 tons, Erie avenue sewer, Philadelphia, to Baker Warehouse Co.
150 tons, Fidelity Mutual Life building, Phila-Davis Bros., in addition to 200 tons awarded Concrete Steel Co. last week.
150 tons, apartment house in St. Louis, to Laclede Steel Co.
150 tons, Tennessee road work, to Concrete Steel Co.
125 tons, Certainteed Products Co. building, Philadelphia, to Kalman Steel Co.
125 tons, dam, Phoenixville, Pa., to unstated rail steel mill.
120 tons, Hyde Park Baptist church, Chicago, to Olney J. Dean & Co.
120 tons, Illinois road work, to Olney J. Dean & Co.
110 tons, St. James hospital, Chicago Heights, Ill., to Calumet Steel Co.
110 tons, Terrace Apartment Building Co., Chicago, to Barton Spiderweb System.
105 tons, Winthrop Building Corp., Chicago, to Calumet Steel Co.
100 tons, highway bridge at Franklin, Pa., to the Kalman Steel Co.
100 tons, Pennsylvania hospital building, Philadelphia, to Davis Bros.
100 tons, St. Mary Immaculate school, Waterbury, Conn., to Truscon Steel Co.
100 tons, Mt. Sinai hospital, New York, to Truscon Steel Co.
100 tons, Savoy hotel, New York, to Jones & Laughlin Steel Corp.
Tonnage unstated, Shrine temple, Des Moines, Iowa, to Concrete Engineering Co., through J. & W. A. Elliott Co., 906 Lumber Exchange building, Minneapolis, general contractor.
Tonnage unstated, cement plant work for Phoenix Portland Cement Corp. of Alabama, Powderly, Birmingham, Ala., to Southern Steel & Rolling Mills Inc.

CONTRACTS PENDING

814 tons, Seventh street viaduct, Los Angeles; bids in May 3.
800 tons, Mid-Hudson bridge, Poughkeepsie, N. Y.; pending.
700 tons, Van Dam street warehouse, New York; pending.
500 tons, building, West Twenty-sixth street, New York; pending.
500 tons, Texas street sewer, Buffalo; bids taken April 12. Pittsburgh Foundation Co. low bidder.
350 tons, Packard Motor Car Co. service station, New York; pending.
200 tons, office building, Boston Gas Co.; bids in.
200 tons, apartment No. 2 at Bayard and Melwood streets, Pittsburgh, for the Webster Hall Corp.; bids about to be asked.
200 tons, high school, Maplewood, N. J.; pending.
197 tons, bridge for federal aid project 302A, Bismarck, N. D.; bids in April 22.
140 tons, O'Neill Supply Co. building, Queensboro, N. Y.; pending.
130 tons, Hilo Varnish Co. building, Brooklyn, N. Y.; pending.
114 tons, bridge for federal aid project 301A, Bismarck, N. D.; bids in April 22.

Rails, Cars

Equipment Demand Scattered—Pennsylvania Closes on 2000—Resume Rail Buying at Chicago

BUYING of equipment is featured by award of 2000 freight and 209 passenger cars by Pennsylvania and placing of 500 hoppers by the Burlington. A secondary rail buying movement has started at Chicago with placement of 9000 tons. Light rail business shows considerable improvement in the Pittsburgh district.

RAILROAD TRACK MATERIAL PRICES, PAGE 1012

New York, April 13.—Car orders are dominated by the award of 2000 by the Pennsylvania. Locomotive demand is rather featureless, although a fair number of specifications in the aggregate are being figured.

American railmakers understand that the European rail market has advanced substantially $3 a ton as result of the formation of the Rail syndicate, comprising important European makers.

The Pennsylvania railroad has exercised options for an additional 15,000 tons of rails for early delivery.

United States Steel Corp. received an order for 375,000 tie plates from the Missouri, Kansas & Texas railroad. Illinois Steel Co. and Tennessee Coal, Iron & Railroad Co. will fill the order involving 1875 tons.

Boston, April 13.—Some frog and switch material has been awarded during the week, but other than this railroad buying is quiet. The Boston & Maine is understood to have closed for several gas electric passenger cars.

Pittsburgh, April 13.—Light rail business for some of the larger producers has been three times greater to date than in the same period in March. Some attractive orders came in prior to April 10 from coal mine operators. The price is $35 although here and there an effort is being made to obtain $36.

Track accessory orders are few. Makers are operating at a high rate against backlogs. Prices show weak spots, particularly on small spikes, but generally the quoted bases are upheld.

Chicago, April 13.—A secondary rail buying movement is developing. The placing of 9000 tons of rails, of which 6000 will be rolled at Birmingham, is accepted as the forerunner of further business. Western carriers continue to press for rails for their spring track-laying programs and rail mill capacity is engaged 100 per cent. Practically no light rails are being placed; last year's business totaled only 163,607 tons, the smallest in 25 years, reflecting the depressed situation in the coal mining industry.

The Burlington placed 500 hoppers with the American Car & Foundry Co., insuring about 5000 tons of heavy steel for the leading interest. Carbuilders specified 30,000 tons of steel last week. New car inquiry includes 600 automobile cars for the Texas & Pacific.

Car business this year presents a totally different aspect from last year. Thus far in 1926 as many cars have been placed as in the first seven months of 1925. This year business & North Western is expected to place 3000 cars this year but its program at this time is indefinite.

The Cincinnati Street Railway Co., is in the market for 600 tons of girder rails.

ORDERS PLACED

Baltimore & Ohio, 100 caboose car superstructures, to the Pressed Steel Car Co., underframes awarded that company last week, and 16 air dump cars to the Koppel Industrial Car & Equipment Co.

Burlington, 500 hoppers, to American Car & Foundry Co.

Missouri-Pacific, five gasoline-electric passenger and baggage cars, to the Electro-Motive Co.

Pennsylvania, 2000 automobile box cars and 209 passenger coaches as follows: 500 auto box and 100 coaches to American Car & Foundry Co., 500 auto box to Ralston Steel Car Co., 600 auto box to Bethlehem Steel Co., 400 auto box and 35 coaches to Pressed Steel Car Co., 32 miscellaneous coaches to Pullman Car & Mfg. Corp., 22 passenger and 20 suburban coaches to Standard Steel Car Co. The road still has 25 baggage cars yet to be placed.

Pere Marquette, 10 air dump cars, to the Magor Car Corp.

LOCOMOTIVE ORDERS PLACED

Corocabana railway, Brazil, 10 locomotives, to the Baldwin Locomotive Works.

F. C. del Guzo Y. Santa Ana, two locomotives, to the Baldwin Locomotives Works.

Great Northern, oil-electric locomotive, to the Ingersoll-Rand Co., the General Electric Co. and the American Locomotive Co., these companies co-operating in its manufacture.

ORDERS PENDING

Chile Exploration Co., four flat cars; bids asked.

General Electric Co., six flat cars; bids asked.

Reading, 30 passenger cars; pending.

Southern railway, 500 flat car underframes; bids asked.

South Porto Rico Sugar Co., 100 cane cars; pending.

Texas & Pacific, 600 automobile box cars; pending.

Utah Copper Co., 35 dump cars; bids asked.

LOCOMOTIVE ORDERS PENDING

Green Bay & Western, six locomotives; pending.

Royal State Railways of Siam, steam or internal combustion shunting engines; bids closed by Purachatra, commissioner-general, Bangkok, Siam, June 28; specifications available through C. P. Sandberg, 100 Broadway, New York.

Wire

Demand Better Than Year Ago—Weather Delays Full Buying—Prices Firm

CONSUMERS of wire are taking larger tonnages than at the same period last year in the face of bad weather conditions that have restricted agricultural buying in some sections. Jobbers are taking slightly larger lots but stocks continue small. Some repeat business is appearing. Prices continue firm at the established levels.

WIRE PRICES, PAGE 1012

Chicago, April 13.—Both manufacturing and jobbing lines of wire and wire products are in better demand than a year ago. Improvement in March more than offset the decline in January and February and the year to date for both lines is ahead of 1925. Jobbers have resumed buying after ten days of delay, due to inclement weather, but still display a disposition to keep stocks to a minimum. Mill stocks, especially on nails, have run down. Demand for the manufacturing lines is spotty, with that from the automobile industry holding up well. Opening market prices are unchanged at 2.55c, Chicago or western mill, for plain wire and 2.70c for wire nails.

Boston, April 13.—Manufacturers of wire specialties report better orders, and plain wire makers find conditions slightly improved. Nails are moving more freely to dealers. Netting and fence manufacturers are running behind 1925. The price of plain wire holds at 2.65c Worcester.

Buffalo, April 13.—Repeat business on wire cloth and netting is coming in. Prices have been steadier. Mill operation is estimated at 80 to 85 per cent of capacity. Specialties are in fair demand.

Pittsburgh, April 13.—There has been no effort on the part of wire products makers to stimulate increased buying through price concessions. The bases are unchanged, 2.50c on plain wire and 2.65c on wire nails. A slight increase in orders from jobbers was noted last week. Selling efforts are hampered by continued poor weather in many parts of the country. Wire and nail mills are operating at about 60 or 65 per cent of capacity.

Nonferrous Metals

Prices Sag With Demand Light—Shipments Continue Heavy and Smelter Stocks Are Comparatively Light—Business Is Good

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Spot Straits Tin, N. Y.	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
April 7	14.00	14.12½	13.40	63.25	8.25	7.97½	7.10	27.00	17.50	35.00
April 8	13.97½	14.10	13.35	62.25	8.00	7.75	7.00	27.00	17.50	35.00
April 9	13.87½	14.00	13.30	62.25	8.00	7.65	6.97½	27.00	17.50	35.00
April 12	13.87½	14.00	13.25	62.75	8.00	7.65	7.00	27.00	17.87½	35.00
April 13	13.87½	14.00	13.30	63.87½	8.00	7.70	7.17½	27.00	18.00	35.00

NEW YORK, April 13.—Sales of nonferrous metals were light in the past week and prices sagged, with the exception of the usually stable aluminum and nickel markets. Antimony and tin went up on Monday after earlier weakness but even so nearly all of the nonferrous metals were much under the March averages.

Shipments of every one of the metals and the mill products continued at high rates and smelter stocks remained comparatively light. March statistics on copper and zinc revealed wonderful business, similar to that in steel. However, in all of the metals a factor is receiving much attention that does not get into statistics, and that is readjustment for lighter business that usually rules late in the spring and in the summer. In this connection the fact must not be overlooked that though prices of all metals are a little higher than they were a year ago, they have had a good shaking down. On the other hand, output is larger now than then.

Export business continues light but metal producers see some hope in various improvements in Europe. However, the coal situation in England is a cloud in the sky.

Zinc—Shipments of zinc to domestic users in March at 51,615 tons were of record breaking size. Shipments from smelters for export also were larger than in recent months, so that total shipments were 54,191 tons. This total has been surpassed a few times when exports were greater. However, stocks increased 220 tons as output in March remained high even though it was lighter than in January and lighter on a daily basis than in February. The total of stock at the end of the month was 20,561 tons, showing a much smaller increase than in the previous few months and still remaining less than half a month's shipments. This situation, however, did not prevent prime western from slipping slightly below 7.00c East St. Louis but since the figures became known the market has been firmer at this figure.

Copper—Consumption of copper continues at a high rate but as in all other metals some producers make concessions more freely than others to keep their stocks in good condition against the day that they think will come for the warm weather letdown. Some metal has sold at 13.87½c delivered (usually ⅛c more in Midwest) but the market is quiet and some producers hold at 14.00c. Shipments in the first quarter of the year were almost record breaking. Stocks at the end of March totaled 75,206 tons, a decided drop compared with 86,354 tons at the end of the preceding month. Production during March was slightly larger than in February.

Tin—After a material recession in prices lately, the market turned a little firmer, especially on nearby positions. Supplies still are in a tight position but traders are watching more the time when supplies will be a little freer and demand less urgent, and for that reason there is a wide spread, nearly 4 cents, between prompt and future shipment from the Straits. April arrival has been selling a little above 62.00c and May more than 1 cent less, because the pressure is for early metal and users are reluctant, as in other lines, to commit themselves ahead.

Lead—Weakness in the European market and lighter buying here have forced prices down despite the fact little spot metal is available and several smelters are well sold for a few weeks ahead. Buyers are reluctant to go farther.

Aluminum—Shipments are active but all on contracts, so that new buying is not necessary. Prices are unchanged on new metal.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
High brass	18.87½
Copper, hot rolled	22.50
Zinc, ga. 9 to 23 (100-pound base)	11.50 to 11.75
Lead full sheets (cut ¼c more)	12.25 to 12.75
Aluminum, bright flat, up to 10 gage	37.50
SEAMLESS TUBES	
High brass	23.50
Copper	24.25
RODS	
High brass (round ⅝ to 2½-inch)	16.62½
Naval brass	19.37½
WIRE	
Copper, small lots	16.00
High brass	19.37½

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	8.75
Chicago	9.00
Cleveland	9.50 to 9.75
HEAVY YELLOW BRASS	
New York	7.25
Chicago	8.00
Cleveland	7.00 to 7.25
ZINC	
New York	4.00
Cleveland	4.50 to 4.75
HEAVY COPPER AND WIRE	
New York	11.50
Chicago	11.00
Cleveland	10.50 to 10.75
RED BRASS BORINGS	
New York	8.25
YELLOW BRASS TUBING	
Cleveland	7.00 to 7.50
LIGHT COPPER	
New York	9.25
Chicago	9.00
Cleveland	9.50 to 9.75
LIGHT BRASS	
Chicago	7.25
Cleveland	6.50 to 6.75
ALUMINUM	
Clippings	21.00 to 22.00
Borings, Cleveland	14.00 to 15.00
Cast	18.00 to 19.00

Secondary Metals

Remelt aluminum No. 12	24.00 to 24.50
Brass ingot, 85-5-5-5	11.75

Coke By-Products

Market Steady—Production of Distillates Slightly Lower

New York, April 13.—Light oil distillates remain steady. Demand is well maintained; production has fallen off slightly. Ninety per cent benzol is quoted at 24 cents works in tanks, and 29 cents in drums; pure benzol at 23 cents works in tanks, and 28 cents in drums; solvent naphtha and toluol 35 cents in tanks and 40 cents in drums, and commercial xylol at 36 cents in tanks and 41 cents in drums.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contract
Pure benzol	$0.23	
90 per cent benzol	0.24	
Toluol	0.35	
Solvent naphtha	0.35	(nominal)
Commercial xylol	0.36	(nominal)
Phenol	0.22	0.22
Per Pound at Producers' Plants		
Naphthalene flakes	0.07	
Naphthalene balls	0.08	
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.62½	

Seasonal dullness prevails in sulphate of ammonia, but specifications are coming out freely against long term contracts placed last year. Prices are nominally unchanged. Sulphate for domestic account is quoted at $2.60 to $2.65, delivered, and for export at $2.60 to $2.65, port, in double bags. Naphthalene is quiet and unchanged at 7 cents works, for flakes and 8 cents for balls.

Niagara Blower Co., Buffalo, has increased capital from $80,000 to $125,000.

Machinery

First Quarter Business Half Again That of First Three Months of 1925—Sales in April Not So Plentiful

WITH the exception of the Chicago territory, machine tool and equipment business has shown some recession during the last week and this has placed business for the month considerably below that of the first three months of this year. Reports are that sales for the first quarter were well above those for the corresponding period of 1925, in some cases almost double. Inquiries are not as plentiful as in the past. Machinery interests feel that manufacturers generally have their eyes too much upon the stock market instead of upon their own business and that business if analyzed would be found in good shape. Deliveries are easier on standard tools but are becoming more deferred on special units. Few sales feature the crane market.

New York, April 13.—Machine tool buying again is spotty, with few outstanding orders. Florida East Coast has closed on a few additional machines, including a 300-pound steam hammer and 1200-pound helve hammer placed with Manning, Maxwell & Moore Inc., and 400-ton wheel press and 6-foot radial drill, with the Niles-Bement-Pond Co. Brooklyn City railway has closed on three engine lathes and two upright drills, 20 and 22-inch, respectively, this business going to Manning. Virtually all other orders, however, are confined to single tools. Included are 100-inch quartering machine for Pennsylvania railroad, a 350-pound steam hammer for a utility company, both orders going to the Niles company; a jig boring machine each for International Motors Co., Plainfield, N. J., Gisholt Machine Co., Madison, Wis., and Warner & Swasey Co., Cleveland, all going to the Pratt & Whitney Co. General Electric Co. continues active, closing on three milling machines for its Schenectady plant, and an engine lathe for Pittsfield, Mass., this going to a Massachusetts builder. Baltimore & Ohio and Michigan Central both closed on 90-inch journal lathes to Manning, Maxwell & Moore Inc.

Boston, April 13.—Tool sales while slightly quieter than a week ago contine fairly numerous and inquiry about holds its own. General Electric Co. has recently been an important buyer with a grinder and two milling machines included in its Lynn, Mass., list. A textile machine manufacturer bought several sentitive drills, and an automobile parts manufacturer took two milling machines and several other tools. Boston & Albany railroad has a list which is expected to be closed during the coming week. A Worcester, Mass., specialty manufacturer bought six or eight tools for a shop rearrangement. A Hartford, Conn., manufacturer, however, has been in the market for several tools in connection with the development of a new airplane engine.

Pittsburgh, April 13.—Buying of machine tools in the Pittsburgh area last week was confined mainly to single items, Westinghouse Electric & Mfg. Co. and other large interests not yet being ready to proceed with purchases against second quarter lists. Westinghouse company in addition to its large list for East Pittsburgh now wants eight or nine large units for its Sharon plant, including metalworking and forming equipment such as shears, bending rolls, presses, etc. Sharon Steel Hoop Co., likewise, is expected to buy some equipment in carrying out its improvement program involving $500,000. It purchased one special item for its sheet mill this past week. The crane market is active as to new inquiries and a fair number of single crane sales are noted each week. Pennsylvania railroad has bough four locomoive cranes.

Cleveland, April 13.—Machine tool sales thus far in April are falling considerably short of the rate of March or even January and February. Business closed last month for some manufacturers was the best in several years, while dealers and builders alike report the first quarter to show a substantial gain over the first quarter of last year, in some instances about 50 per cent better. Inquiries in April have been light. As reported last week, Nickel Plate railroad placed several orders with Cleveland interests but in some cases confirming orders still are awaited. Recent sales in this territory include a spline miller to Trio Tool Co., Detroit; a 16-inch and 13-inch geared head engine lathe to United States Aluminum Co., Cleveland; a centering machine each to Galion Iron Works, Galion, O., and American Radiator Co., Buffalo; all going to Pratt & Whitney Co.

Chicago, April 13.—April in the machine tool market opened well for most houses. Business in the first quarter was at least equal to that of the first quarter of 1925 with the larger sellers and in some cases showed fair improvement. The tendency in prices is toward stiffness. On the whole, deliveries are somewhat easier with those on special equipment more deferred than on standard. One maker of shapers is deferred as much as six weeks, according to size. Planer delivery ranges from immediate to about six weeks. New York Central railroad is inquiring for a 24-inch grinding machine and Santa Fe for an 18-inch lathe and a 24-inch grinding machine. Morden Frog & Crossing Works, Chicago, has placed two frog and switch planers. National Lock Co., Rockford, Ill., has placed two 16-inch shapers. A Chicago district can maker is in the market for several presses. Florida East Coast railroad has completed buying against its recent list.

CRANE ORDERS PLACED

Four 25-ton ballast locomotive cranes for Pennsylvania railroad, to Browning Crane Co.

Four handpower cranes for Anaconda Copper Mining Co., New York, two 15-ton to Alfred Box & Co. and two 2-ton to Maris Bros.

Three gantry cranes for Pennsylvania railroad, two for Lucknow, Pa., and one for Conway, Pa., to Whiting Corp.

Three handpower cranes, including one 6-ton, one 2-ton and one 1-ton, for Morganite Brush Co., Long Island City, N. Y., to New Jersey Foundry & Machine Co.

Two ditchers for Illinois Central railroad to American Hoist & Derrick Co.

Among single orders were: 3-ton jib crane for Cornell & Underhill, New York, to Alfred Box & Co.; 15-ton 4-motor crane for Enola, Pa., shops of Pennsylvania railroad, to Niles Crane Corp.; 20-ton used locomotive crane for Bethlehem Mines Corp., Bethlehem, Pa., to Philip T. King; 10 or 15-ton handpower crane for International Cement Co., New York, to unnamed builder; 25-ton locomotive crane for Clearwater Timber Co., a far western company, to American Hoist & Derrick Co.; 25-ton used crane installed at the former Plainfield, N. J., plant of Niles-Bement-Pond Co., to Baldwin Locomotive Works, Eddystone, Pa.; 10-ton overhead crane for Columbia Steel Co., Butler, Pa., to Morgan Engineering Co., reported last week going to northern Ohio crane builder; 10-ton electric traveling crane for Aetna Foundry & Machine Co., Warren, O., to Northern Engineering Works; 5-ton crane for Virginia railway, Princetown, W. Va., to Northern Engineering Works; 10-ton crane for Clearfield Machine Co., Clearfield, Pa., to Northern Engineering Works; 5-ton crane for William Lang Sons Co., Cincinnati, to Northern Engineering Works; 10-ton trolley for J. E. Moss Iron Works, Wheeling, W. Va., to Northern Engineering Works; 20-ton crane with two 10-ton trolleys for Oswego River Power Corp., Oswego, N. Y., to Northern Engineering Works; 2-ton electric traveling crane for Philadelphia Rubber Works, Akron, O., to Northern Engineering Works; 2-ton electric traveling crane for Fairfax Box Co., Middletown, O., to Northern Engineering works.

CRANE ORDERS PENDING

Ten single crane inquiries for as many different manufacturers in Pittsburgh district, including one 75-ton crane for a steel interest in Mahoning valley; bids being compiled.

10-ton electric crane for Scottdale, Pa., plant of United States Cast Iron Pipe & Foundry Co.; inquiry withdrawn, requirement to be met by installation of a similar crane formerly used at Atlanta, Ga., plant.

15-ton 4-motor crane for plant addition for Harris Structural Steel Co., Newmarket, N. J.; pending.

Conveying equipment for Phoenix Utility Co., New York, for Lewistown hydroelectric development in West and for a hydroelectric development in South Carolina; contemplated. Specifications will include a 200-ton gantry, 100-ton gantry and gate hoists.

Warehouse Market Spotty but Good

BUYING of iron and steel warehouse products is spotty. Many jobbers report better sales, total volume running about on a par with March. Prices show little change, sellers being willing to obtain the full list on the bulk of sales.

Jobbing demand in the New York district continues fairly active, with prices unchanged. Sheets are subject to shading in some quarters, but the situation is relatively steady.

Iron and steel warehouse activity in Chicago continues improved over March. Demand was improved during the week. Prices are firm.

Plates from Philadelphia warehouses now are quoted 2.70c to 3.20c delivered locally and on 3/16-inch plates 2.85c to 3.15c. Other prices are unchanged. Pittsburgh basing no longer is observed on out of town shipments. Outside prices are about $2 a ton under local prices.

Cleveland jobbers report spotty business, orders being heavy one day and light the next. Prices are unchanged and firm. More weakness is reported in sheets.

A slight lull marks the present situation in Detroit warehouse markets. Operators report that tonnage being moved is somewhat smaller than earlier in April.

Warehouse business at Cincinnati continues to lag. Pipe, structurals and deformed bars are in better demand. Nails have firmed up to 2.65c Pittsburgh on mill sales.

Quotations at Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.15c
Ft. Worth	3.90c
Los Angeles	3.20c
New York	3.24c
Philadelphia	3.00c to 3.20c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	4.06c

IRON BARS

Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.15c
Ft. Worth	3.90c
New York	3.24c
Philadelphia	3.00c to 3.20c
St. Louis	3.25c
Tulsa	4.06c

REINFORCING BARS

Boston	3.265c to 3.50c
Buffalo	3.30c
Chicago, billet	2.60c
Chicago, rail steel	2.00c
Cincinnati	3.30c
Cleveland	2.40c to 3.10c
Detroit	3.15c
Ft. Worth	3.75c
Los Angeles, C. L.	3.05c
Los Angeles, L. C. L.	3.30c
New York	2.95c to 3.15c
Philadelphia	3.00c to 3.25c
Pittsburgh	2.50c to 2.60c
San Francisco, C. L.	3.35c
San Francisco, L. C. L.	3.80c
Seattle	3.50c
Tulsa	4.06c
Youngstown	2.50c to 2.60c

STANDARD STRUCTURAL SHAPES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.25c
Ft. Worth	4.50c
Los Angeles	3.20c
New York	3.34c
Philadelphia	2.70c to 3.05c
Pittsburgh	3.00c
Portland	3.10c
San Francisco	3.30c
Seattle	3.35c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	4.16c

PLATES

Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-inch and thicker	3.00c
Cleveland, 3/16-inch	3.225c
Detroit	3.25c
Detroit, 3/16-inch	3.45c
Ft. Worth	4.50c
Los Angeles	3.20c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.70c to 3.20c
Philadelphia, 3/16-inch	2.85c to 3.15c
Pittsburgh	3.00c
Portland	3.25c
San Francisco	3.30c
Seattle	3.25c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	4.16c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	3.915c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.65c
Los Angeles	3.75c
New York	3.89c
Portland	4.25c
Philadelphia	3.50c
San Francisco	3.75c
Seattle	4.50c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.56c

NO. 28 BLACK SHEETS

Boston	5.25c
Buffalo	4.60c
Chicago	4.10c
Cincinnati	4.55c
Cleveland	4.10c
Detroit	4.25c
Ft. Worth	5.50c
Los Angeles	4.75c
New York	4.50c
Philadelphia	4.65c
Portland	5.25c
San Francisco	4.75c
Seattle	5.50c
St. Louis	4.60c
St. Paul	4.35c
Tulsa	5.16c

NO. 28 GALVANIZED SHEETS

Boston	6.25c
Buffalo	5.90c
Chicago	5.25c
Cincinnati	5.65c
Cleveland	5.25c
Detroit	5.50c
Ft. Worth	6.25c
Los Angeles (corr. 28 ga.)	6.00c
New York	5.65c
Philadelphia	5.85c
Portland	6.25c
San Francisco	6.00c
Seattle	6.50c
St. Louis	5.70c
St. Paul	5.60c
Tulsa	6.31c

BANDS

Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.80c
Ft. Worth	4.65c
Los Angeles	4.05c
New York	3.99c
Philadelphia	3.75c to 3.90c
Pittsburgh	3.60c
Portland	4.25c
San Francisco	4.15c
Seattle	4.25c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cleveland	3.65c
Detroit	4.30c
New York	4.49c
Philadelphia	4.00c to 4.25c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds and hexagons	Flats and squares
Boston	4.05c	4.55c
Buffalo	3.90c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.90c	4.40c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	4.00c	4.50c
Philadelphia	4.00c	4.50c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, .100 inch, 500 lb. lots	6.30c
Buffalo	6.35c
Chicago	6.25c
Cincinnati	7.15c
Cleveland, over 500 lb. lots	5.95c
Detroit	6.20c
New York	6.25c
Philadelphia	6.25c
Pittsburgh	6.30c

FOREIGN IRON AND STEEL

New York duty paid

Swedish, hollow drill steel	15.00c
Swedish iron bars, round	6.75c
Flats and squares	7.00c

WELDED PIPE

Discounts from warehouse, New York City

Standard Steel Pipe

WROUGHT STEEL PIPE

	Black	Galvanized
⅛-inch butt	—28	+21
¼ to ⅜-inch butt	—36	— 3
½-inch butt	—46	—29
¾-inch butt	—51	—37
1 to 3-inch butt	—53	—39
2-inch lap	—46	—22
2½ to 6-inch lap	—48	—35
7 and 8-inch lap	—44	—17
9 and 10-inch lap	—38	—14
11 and 12-inch lap	—37	—12

WROUGHT IRON PIPE

	Black	Galvanized
¼ to ⅜-inch butt	+44%	+78%
½-inch butt	— 4	+19
¾-inch butt	—11	+ 9
1 to 1½-inch butt	—14	+ 6
2-inch lap	— 5	+14
2½-inch lap	— 9	+ 6
3 to 6-inch lap	— 3	+ 6
7 to 12-inch lap	— 3	+16

Coast Buys Pipe Plates

Large Award Made for Line at San Diego—Most Steel Buying Is in Small Lots—Prices Steady

SAN FRANCISCO, April 8.—(*By Air Mail*)—Of importance this week in the Coast markets for iron and steel products was the lettings of the San Diego pipe line involving 6000 tons of plates which was awarded to the Western Pipe & Steel Co. for lock-bar pipe. Bids were received on various types, including cast iron pipe, welded and riveted steel pipe. Trading generally was a little more pronounced this week, although most awards continue to be small lots. General business conditions are good and the outlook is encouraging, especially in California where heavy rains have recently fallen. The price structure, on the whole, continues firm with little or no shading of prices noted.

Pig Iron and Coke

The pig iron and coke market on the Pacific Coast remains stationary.

Coast Pig Iron Prices

Columbia basic	$27.00 to 28.00
Columbia, No. 2 Fdry., San Francisco and Los Angeles	27.00 to 28.00
Anzan No. 1 (Chinese) 2.50 to 3.50 sil. Del. S. F.	25.50
Anzan No. 1 (Chinese) 2.50 to 3.50 sil. Del. L. A.	25.75
*Dutch	24.00
*Indian iron	24.25
*Belgian	24.00
German	24.00
*English (2.75 to 3.75 sil.)	25.00 to 26.00

*C.i.f. duty paid.

Trading is confined to small spot lots and with the exception of the Southern Pacific inquiry for 1000 tons of foundry iron, still pending, no large lots are up for figures. Prices remain unchanged from those quoted last week.

Bars, Plates and Shapes

Demand for merchant bar steel is confined to relatively unimportant lots. Concrete bar awards aggregated 3500 tons this week. Included among the larger awards were 2030 tons for a concrete pipe line in connection with the East Bay municipal utility district, taken by the Columbia Steel Corp., 600 tons for hospital buildings at Mare Island and 600 tons for an addition to St. Mary's hospital in San Francisco, both awarded to Barrett & Hilp. Current inquiries are confined almost entirely to small lots of less than 100 tons. Several fair sized projects are up for figures but the total pending business is considered below normal. Prices continue firm with no evidence of shading.

The interest of the plate fabricating trade has been, during the past two or three weeks, centered in the opening of bids for the San Diego pipe line. The Western Pipe & Steel Co. was given the contract for 17 miles of the proposed 25-mile line, involving 6000 tons. Awards this week totaled over 6900 tons and in addition to the above project included 630 tons for a pipe line at Taft, Calif., and 320 tons for a pipe line at Spokane, both placed with the Steel Tank & Pipe Co. The only inquiry of importance before the trade at present involves 100 tons for a pipe line for the Thermalito irrigation district at Oroville, calling for 125 tons of blue annealed sheets. Prices continue around 2.30c c.i.f. for general offerings while 2.25c can be obtained on desirable business.

Most fabricated steel bookings are lots of less than 100 tons. Awards totaled 1055 tons this week and included 450 tons for a school at Crockett, Calif., placed with the Moore Dry Dock Co., 375 tons for an addition to a telephone building at Seattle, booked by Hofius Steel & Equipment Co. and 130 tons for an apartment house in San Francisco awarded to the Central Iron Works. Pending business exceeds 10,000 tons. New inquiries of the week aggregate 4000 tons, among which is 2750 tons for the Yakima irrigation district in Washington and 350 tons for the Frick school in Oakland. Prices continue firm at 2.35c c.i.f. for general offerings with rumors of a 2.30c price on large, desirable lots.

Cast iron pipe awards totaled over 1500 tons this week. Los Angeles awarded 739 tons to the American Cast Iron Pipe Co. and Prosser, Wash., placed 685 tons with B. Nicoll & Co. The San Diego pipe line, bids on which were opened April 5, went lock-bar pipe. Had this been awarded on a cast iron pipe basis over 25.000 tons would have been involved. New inquiries before the trade do not call for a large tonnage. The United Concrete Pipe & Construction Co. was awarded 188 tons of 10-inch pipe for North Sacramento, Calif. Prices continue around $51 base delivered.

Distributors of out-of-stock material report March sales as being slightly in excess of those for February. All lines are fairly active and prospects for the coming month are bright.

Pig Iron Melters Defer Purchases

(*Concluded from Page* 1013)

Owens-Rentschler, Inc., Hamilton, O., bought 600 tons of northern iron from a lake furnace interest. The Hoosier Iron Works, Kokomo, Ind., is reported to have bought 450 tons of malleable iron, while the Superior Gas Engine Co., Springfield, O., closed for 250 tons of northern iron. The Peerless Mfg. Co., Louisville, Ky., is inquiring for 250 tons of southern iron. The recent reduction of $2 a ton in bessemer ferrosilicon and silvery iron prices has not stimulated buying. While transactions in southern iron have been exceedingly light, the market is firm at $21 to $22 Birmingham.

One furnace interest in the Ironton district produced 9500 tons in February and shipped 13,000 tons. Through a typographical error, the amount of these shipments was given as 1300 tons in the Cincinnati market report in the April 8 issue of IRON TRADE REVIEW.

Chicago, April 13.—The reduction in northern No. 2 foundry and malleable iron to $22, Chicago furnace, has not had marked effect either way on activity. Caution continues the watchword of many melters. The melt of iron is declining somewhat, eight of the 10 merchant stacks in this district continue active and prompt shipment on spot orders is usually obtainable; largely for these reasons melters are continuing their short buying. Western Michigan foundries on automobile work are a shade less active. Malleable foundries have suffered a greater loss in operations than the gray iron. Spot sales show a week-to-week increase and in many instances are limited to not over two carloads. With the blowing in of its fourth stack at Indiana Harbor early in May the Inland Steel Co. will cease being a buyer of basic. The Thomas stack at Milwaukee is scheduled to resume about May 1. The resale iron that is being offered is a negligible quantity considering merchant stack shipments. A sale of 100 tons of low phosphorus iron is noted. Most of the special irons are not active but are holding in price.

St. Louis, April 13.—Pig iron buying is confined to small prompt lots. The melt holds up to the recent high levels, and in some instances stocks are light. The reduction of northern iron to $22 Chicago came as a surprise, as the tone in that district recently was firm. It is expected that southern producers will adjust downward. Unusually keen competition has developed. Inquiry has dwindled, the only demand of any size appearing being 500 tons for an Illinois machinery manufacturer. In addition there are requests for prices on car lots up to 150 tons, totaling approximately 600 tons.

Birmingham, Ala., April 12.—With 13 blast furnaces on foundry iron, 10 on basic and one on ferromanganese, production of pig iron is barely meeting requirements in this district. A little iron is being taken from the yards. Sales are being made, but larger melters have been holding off anticipating concessions. Furnace interests give no intimation that round tonnages would induce them to shade $22 for No. 2 foundry. On small spot orders $23 is quoted. Some inquiries are being received for third quarter.

North American Iron Works, Brooklyn, N. Y., has increased capital from $100,000 to $200,000.

Ferro "War" Costly

Competition Cut $4,000,000 from Makers' Profits

New York, April 13.—Now that 95 per cent or more of the ferromanganese requirements of the steel industry of the United States are under contract for the year, it is interesting to review the price disturbance which featured this business.

Last fall the Bethlehem Steel Co. decided to become an important factor in production of ferromanganese for the market. In acquiring an order book, naturally, the Bethlehem company had to take business formerly obtained by other producers. There thus developed new conditions of competition in the market which apparently had to be fought out on a price basis.

It is estimated about 350,000 tons of ferromanganese will be consumed by the American steel industry in 1926. The United States Steel Corp. uses about 150,000 tons, which it produces. The Bethlehem company consumes at the rate of about 50,000 tons a year. It is figured that the remainder of the steel industry accounts for 150,000 tons.

It is estimated that Bethlehem emerges from the struggle with outside orders for approximately 25,000 to 30,000 tons, which, with its own requirements, give it a total producing schedule of 75,000 to 80,000 tons during 1926. This leaves 120,000 to 125,000 tons which apparently will be supplied mainly by the other participants in the recent selling wave, E. J. Lavino & Co. and the Electro Metallurgical Sales Corp.

Price cutting developed as early as last fall, although it applied only in individual cases. The general price in the open market was $115, duty paid tidewater, and a good deal of the tonnage was placed at that figure. At the same time, the situation generally was somewhat unsettled, so that E. J. Lavino & Co. on March 6 announced a cut to $110. Then there were two successive cuts of $5 each, bringing the market down to $90, duty paid tidewater.

Next it was rumored that one of the producers had made a special price, quoting $90, but with the proviso that an allowance of $2 a ton would be granted when the invoices were rendered at the time of shipment. A considerable tonnage was placed at a flat price of $88, duty paid tidewater.

One seller has adjusted all its outstanding contracts to the basis of $88, duty paid tidewater. Another seller which prior to the price cutting wave in March had accumulated a large order book at prices varying from $105 to $115, has adjusted all of its contracts to the basis of $90, duty paid tidewater. The third producer has business on its books at $88 to above $95, duty paid tidewater.

The price war is believed to have cost producers about $4,000,000. If the 150,000 tons of outside business had been booked at the previously prevailing price of $115, duty paid tidewater, the total business would have involved an outlay of about $17,250,000. It is not possible to report exactly what the producers will obtain for this metal. They probably will receive a total estimated around $13,500,000.

Iron and Steel Rates From Chicago Raised

Chicago, April 13. — Commodity freight rates on iron and steel articles from Chicago to points in Illinois, St. Louis and immediate Wisconsin territory will be revised, April 25, as an outgrowth of the Jones & Laughlin mileage case. In most cases rates will be advanced. Typical of the proposed changes are the following, the comparisons being of the old and the new rates in cents per 100 pounds:

From Chicago to	Angles, bars, bands, plates, sheets	Structural shapes
St. Louis	17½ to 22	17½ to 22
(Illinois)		
Alton	17½ to 22	17½ to 22
Bloomington	13 to 16½	15½ to 16½
Canton	15½ to 17	17½ to 17
Danville	13 to 15½	15½ to 16½
Decatur	15½ to 18	17½ to 18
Galesburg	11½ to 17	13½ to 17
Jacksonville	15½ to 20	17½ to 20
Joliet	6 to 8	6 to 8
Kankakee	8 to 10	9½ to 10
Moline, Rock Island	15½ to 17	17½ to 17
Peoria	15 to 16½	15½ to 16½
Springfield	15½ to 18	17½ to 18
(Wisconsin)		
Milwaukee	8 to 9½	8 to 9½
Beloit	9½ to 12	11½ to 12
Madison	9½ to 14	11½ to 14

Plans Foundry Outlet for Eastern Pig Iron

Increasing imports have been the cause of much concern among the eastern producers. For the year 1925 the imports of pig iron at Philadelphia alone amounted to 207,181 tons. December's tonnage was 32,329. Through their inability to pay wages and costs necessary to support the American standard of living, in competition with cheap labor in Europe and British India, operators say several furnaces have been compelled to shut down. The most striking instance referred to is the suspension at the Warwick furnaces at Pottstown, Pa., a serious blow to a thriving community.

Confronted by these conditions, Alan Wood Iron & Steel Co., Philadelphia, it is understood, is seriously considering erecting at its blast furnace department foundries for making cast iron gas and water pipe, and ultimately, heavy castings in order to create an outlet for pig iron. Large economies and reductions in costs are believed to be possible by conducting these manufacturing processes at the source of the principal raw material, which is pig iron. The plant is in an advantageous location for shipping the finished product to its markets. The company is said to be figuring on an initial production up to 250 tons a day, and arranging its plans so that it can increase the tonnage up to 1000 tons when necessary.

Pig Iron Tariff Report Now Available

Washington, April 13.—All persons or associations interested in the preliminary report of the United States tariff commission on the costs of production of domestic and foreign pig iron, which recently was completed, may obtain copies of this report by writing to the United States tariff commission at Washington. Officials of the commission are desirous that the report be given adequate distribution among all those interested in the pig iron and steel industries. The hearing on the question of higher rates of duty on foreign pig iron, under section 315 of the tariff act, is scheduled for April 20.

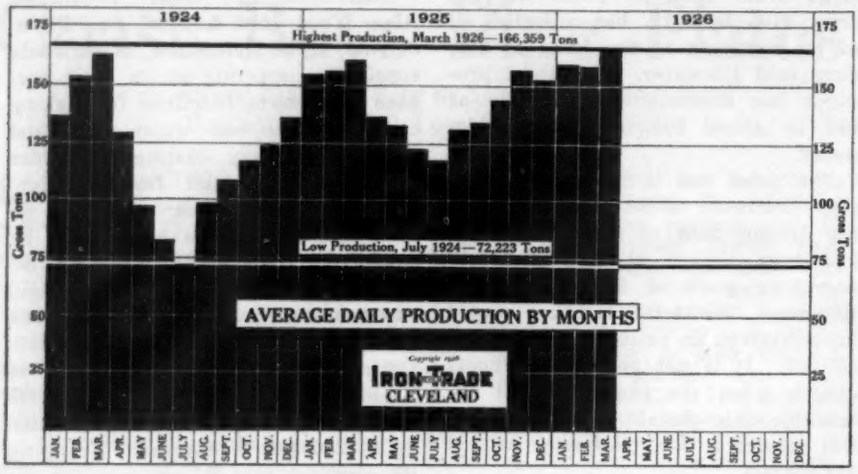
Low Prices Hold Check on Jones & Laughlin Net

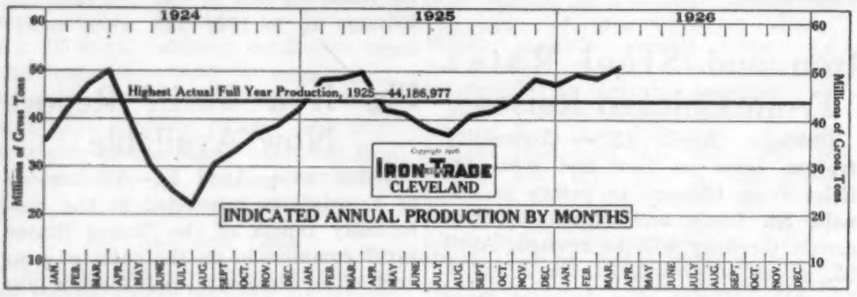
Net earnings of the Jones & Laughlin Steel Corp. in 1925 were $9,954,494 compared with $8,526,228 in 1924. The increase resulted from a gain in shipments, but low prices prevented a full reflection in profits of the 26.7 per cent increase in shipments. The company closed the year with operation not far from capacity and this volume of business continued through the first quarter of 1926.

Pipe Mill Is Planned

Action April 6 by the stockholders of the Bethlehem Steel Corp. in approving the issuance of new 7 per cent, cumulative preferred stock, assures early execution of the plans of the company to erect a pipe mill at Sparrows Point, Md. No information has been given out as to the details of the proposed new unit.

Ingots Establish New Record





MAKING the largest gain of any month since last November, production of steel ingots in March rose to a level which established new records for both total output and daily rate. According to statistics compiled by the American Iron and Steel institute from figures supplied by companies which in 1924 made 94.43 per cent of the country's total, production in March amounted to 4,491,689 gross tons. This was a gain of 687,095 tons over February's revised total of 3,804,594 tons, but February had only 24 working days, as against 27 in March. Previously, the country's highest total was 4,216,355 tons in May, 1923, a 27-day month.

Average daily production in March was 166,359 tons, an increase of 7834 tons, or 4.9 per cent, over the revised rate of 158,525 tons per day of the month before. The country's previous record for daily rate was in March, 1924, with 161,796 tons. As compared with this rate, the March figure was an increase of 2.8 per cent.

On the basis of 166,359 tons per day in March and 311 working days in the year, the indicated annual rate of production was 51,800,000 tons. The indicated rate for February was 49,300,000 tons. Based on the country's theoretical capacity of 56,000,000 gross tons, operations in March represented 92.39 per cent, against 88.04 per cent the month before. Not only was the 12,449,828 tons made in the first quarter of this year the largest for any first quarter but it represented the highest output for any three consecutive months in history. The previous high point was 12,246,771 tons for March, April and May, 1923.

Steel Ingot Production—1925-26

94.43 Per Cent of Industry Reporting

Gross Tons

1925	Open hearth	Bessemer	All other	Monthly production companies reporting	Calculated monthly production all companies	No. of working days	Approximate daily production all companies gross tons	Change in daily production per cent
Jan.	3,262,748	689,996	11,960	3,964,704	4,198,564	27	155,502	+18.3
Feb.	2,931,964	602,042	13,014	3,547,020	3,756,243	24	156,510	+ 0.6
Total 2 mos.	6,194,712	1,292,038	24,974	7,511,724	7,954,807	51	155,977	
Mar.	3,336,169	614,860	13,633	3,964,662	4,198,520	26	161,482	+ 3.1
Apr.	2,857,802	515,715	14,182	3,387,699	3,587,524	26	137,982	—14.5
May	2,754,130	497,708	13,790	3,265,628	3,458,253	26	133,010	— 3.6
June	2,538,988	476,945	12,490	3,028,423	3,207,056	26	123,348	— 7.2
July	2,444,969	457,095	13,547	2,915,611	3,087,590	26	118,753	— 3.7
Aug.	2,696,667	523,734	12,914	3,233,315	3,424,034	26	131,694	+10.9
Sept.	2,737,251	547,121	13,977	3,298,349	3,492,904	26	134,342	+ 2.0
Oct.	3,075,995	584,567	15,624	3,676,186	3,893,028	27	144,186	+ 7.3
Nov.	3,091,361	581,347	17,085	3,689,793	3,907,437	25	156,297	+ 8.4
Dec.	3,169,224	569,304	15,843	3,754,371	3,975,824	26	152,916	— 2.1
Total	34,879,268	6,660,434	168,059	41,725,761	44,186,977	311	142,080	
1926								
Jan.	3,326,846	581,683	13,664	3,922,193	4,153,545	26	159,752	+ 4.4
Feb.	3,023,829*	556,031	12,818	3,592,678*	3,804,594*	24	158,525	— 1.0
Mar.	3,590,791	635,680	15,031	4,241,502	4,491,689	27	166,359	+ 4.9
Total 3 mos.	9,941,466	1,733,394	41,513	11,756,373	12,449,828	77	161,686	

Unfilled Tonnage In Third Decline

Unfilled bookings of the United States Steel Corp. for the third consecutive month declined in March to 4,379,935 tons. This is a drop of 236,887 tons, or 5.13 per cent. Further comparisons follow:

Date	Total	Change, tonnage	Change, per cent
Mar. 31, 1926	4,379,935	236,887—	5.13 —
Feb. 28, 1926	4,616,822	265.917—	5.7 —
Jan. 31, 1926	4,882,739	150,625—	3.0 —
Dec. 31, 1925	5,033,364	451,584+	9.8 +
Nov. 30, 1925	4,581,780	472,597+	11.5 +
Oct. 31, 1925	4,109,183	391,886+	9.5 +
Sept. 30, 1925	3,717,297	204,494+	5.8 +
Aug. 31, 1925	3,512,803	26,664—	0.756 —
July 31, 1925	3,539,467	170,991—	4.6 —
June 30, 1925	3,710,458	339,342—	8.3 —
May 31, 1925	4,049,800	396,768—	8.4 —
Apr. 30, 1925	4,446,568	416,996—	6.6 —
Mar. 31, 1925	4,863,564	421,207—	7.0 —
Feb. 28, 1925	5,284,771	247,488+	4.8 +
Jan. 31, 1924	5,037,323	220,647+	4.58 +
Dec. 31, 1924	4,816,676	784,707+	19.1 +
Nov. 30, 1924	4,031,969	506,699+	14.3 +
Oct. 31, 1924	3,525,270	51,490+	1.48 +
Sept. 30, 1924	3,473,780	184,203+	5.59 +
Aug. 31, 1924	3,289,577	102,505+	3.02 +
July 31, 1924	3,187,072	75,433—	2.3 —
June 30, 1924	3,262,505	365,584—	11.1 —
May 31, 1924	3,628,089	580,358—	13.19 —
April 30, 1924	4,208,447	574,360—	12.008 —

Resist Molders' Demands in Pittsburgh Territory

Pittsburgh, April 13.—The leading employers of iron molders in this territory, including the United Engineering & Foundry Co., the Youngstown Foundry & Machine Co., and the Falcon Bronze Co., resisted during the week demands of molders for a wage raise of 33 1/3 per cent. The men ask an advance from 93¾ cents per hour, the present rate, to $1.25, or an increase in the per diem rate from $7.50 to $10, and a five-day week. Employers countered by offering 95⅝ cents, declaring this represents the highest rate paid molders in the Middle West, and is paid at Wheeling, W. Va. They contend it will be impossible to pay the rate asked by the men and remain in business.

Quarter Century Supplement Highly Appreciated

Judge E. H. Gary

THE Quarter Century Portrayal of Industrial Progress is a comprehensive, intelligent and valuable contribution to the growth and success of the steel industry of the United States during the last twenty-five years, and furnishes a record of achievement which all who are connected with it should be proud to have preserved. All those who contributed to this splendid pamphlet are entitled to, and will receive, the gratitude and commendation of every one who has an opportunity to examine it."

LEADING industrial and business executives of the country are congratulating IRON TRADE REVIEW on the publication of the Quarter Century Supplement in the issue of March 25. The symposium on industrial progress, with particular reference to iron and steel, has attracted worldwide favorable attention. Many letters and messages have been received, and the mails almost daily continue to bring expressions of high appreciation. Excerpts from some of them are reproduced in the following:

P. E. Crowley, president, New York Central Lines, writes:

"IRON TRADE REVIEW is to be congratulated upon the interesting and attractive manner in which the important developments of the last quarter century have been presented and interpreted. I have read it with a great deal of intrest."

From Allen S. Davison, treasurer, Allen S. Davison Co., merchant pig iron producers:

"Profits are not limited to dollars. They may be invested in other quantities and qualities. If a man profits through the advice of a friend, we believe he should give his friend credit. If an advertiser profits through the medium of a magazine we believe he should give the magazine credit. If a reader profits through the quality of editorials or special sections, we believe the editor should be given proper credit. All this is to come to the point of telling you how much we appreciate IRON TRADE REVIEW of March 25 containing the quarter century supplement. It is second only to the editor's page which is a masterpiece."

William W. Hearne, president, William W. Hearne, Inc., Philadelphia, writes:

"Allow me to congratulate you on this week's (March 25) issue. I think the supplement you have gotten out is quite a scoop and is one of the best things I have seen in a long time."

R. H. Sweetser, assistant to the president, American Rolling Mill Co.:

"Your issue of March 25 had so much interesting and valuable information covering the first quarter of this century in iron and steel manufacture that I wish to congratulate you."

E. F. DuBrul, general manager, National Machine Tool Builders association, writes: "It is a very fine piece of work."

Charles M. Schwab

I HAVE had occasion to congratulate you several times during the past year on the wonderful advance and perfection of your work, but I have never had occasion to so thoroughly congratulate you on anything as I have on the pamphlet showing the development of steel, and especially do I feel grateful for the kindly mention that you make of my humble services in this direction . . . . I prize it very highly and am truly appreciative."

K. G. White, advertising manager, Stroh Steel-Hardening Process Co.:

"I have just opened IRON TRADE REVIEW of the 25th and I would not be keeping faith with my own ideals if I refrained from expressing appreciation of your editorial on page 753. It transcends the commercial and leads one in spirit to the high places to vision out across the promised land. Such a fitting introduction to a resume of the industry is worthy of hanging in the private offices of those who are identified as leaders in this progress."

C. E. McKinney, Blystone Mfg. Co., Cambridge Springs. Pa.:

"The March 25 issue of IRON TRADE REVIEW is certainly very interesting in every way. The insert concerning the steel industry and its growth is of sufficient value to preserve this book for indefinite time as part of the collection of industrial works of art."

William H. Barr, president, National Founders' association comments: "This seems to be a very interesting portrayal of the development of American industry."

"A most interesting pamphlet," is the comment in a letter from Arthur G. McKee, Arthur G. McKee & Co., engineers and contractors, Cleveland.

One expression of appreciation comes from Victor H. Power, second vice president, *Manufacturers Record*, Baltimore:

"The symposium 'Steel-Beneficient Force of American Progress' in your quarter century supplement is a bang up piece of work in every way . . . ."

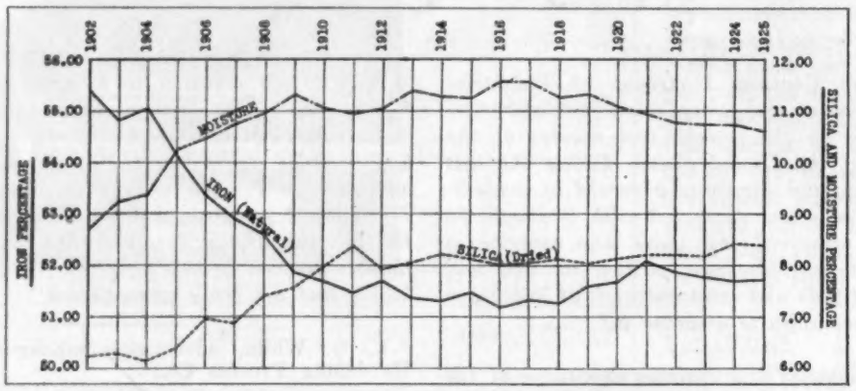
John S. Roney, advertising department, Cleveland office of the Curtis Publishing Co.: "This issue is, in my opinion, the most interesting IRON TRADE REVIEW I have ever seen, not excepting the annual."

Robert E. Masters, San Diego, Calif., who pioneered 40 years or more ago in the melting of steel scrap writes:

"The huge issue . . . . is immense. While I am strictly a gray iron foundry man since the sixties the steel subject takes me back to the early eighties when I melted whole heats of scrap steel alone, without the mixture of any scrap iron at all, the first time it had been done in history . . . The IRON TRADE REVIEW looked good to me."

Quality of Iron Ore Maintained

Lake Superior District Shipping Uniformly High Product—Results of Beneficiation and Grading Shown By Average Analyses—Present Trend in Proportion of Metallic Iron Slightly Upward



AVERAGE ANALYSES OF TOTAL TONNAGE OF ALL GRADES

EFFECT of beneficiation of Lake Superior iron ores is apparent in the average analyses of the product as shipped to furnaces. From 1902 to 1916 there was a steady decrease in the percentage of iron, but since then the proportion has gained, while the tendency toward increase in silica has been held in reasonable limits.

Nearly one-third of all the iron ore forwarded in 1925 went through some process of beneficiation. Beneficiation is in most general use on the Mesabi range. Of all the ore shipped from the Lake Superior district in 1925, 58.3 per cent was low phosphorus, with phosphorus 0.180 or less. The Mesabi range produced 70 per cent of all such ore, and it increased the metallic iron content of its low phosphorus ore from 50.74 in 1924 to 50.91 in 1925, compared with 49.21 in 1916.

The proportion of bessemer ore from all the ranges combined in 1925 was 27.2 per cent, next largest to low phosphorus. The Mesabi range shipped 29.4 per cent of all the bessemer ore, and the proportion of iron was increased from 54.82 to 54.87 in 1925, compared with 53.10 in 1916.

The accompanying tables show the analyses for the various grades, grouped. There is a slight increase in the metallic iron in the low phosphorus ore, compared with 1924. The amount of iron in the bessemer ore in 1925 was the same as in 1924.

The trend as regards quality of the available supply of ore is downward. Uniformity in the quality of the product shipped is due to beneficiation and efficient grading and mixing.

In the list of bessemer ores, the Vermillion range shows the highest percentage of metallic iron for 1925. It averaged 57.52 per cent, while the Menominee range, lowest in the list had an average of 52.35 per cent. The standard for the base grade of ore in the market is 51½ per cent metallic iron.

In the low phosphorus ores the Vermillion range again showed up best as regards metallic iron, with

(*Concluded on Page* 1038)

Average Analyses of Lake Iron Ore, as Shipped

BESSEMER, ALL RANGES

Year	Iron, natural	Phos.	Silica	Mang.	Moisture	%, total
1925	54.80	0.040	8.17	0.36	8.99	27.2
1924	54.80	0.040	8.10	0.34	9.33	27.7
1923	54.98	0.039	7.74	0.34	9.25	29.9
1922	54.57	0.040	7.90	0.35	9.68	29.5
1921	54.36	0.040	7.87	0.36	9.69	32.4
1920	54.18	0.042	7.55	0.46	10.10	31.8
1919	53.96	0.043	7.64	0.45	10.40	32.2
1918	53.84	0.043	7.62	0.46	10.23	31.2
1917	53.48	0.043	7.57	0.48	10.64	32.8
1916	53.59	0.044	7.65	0.47	10.80	33.6
LOW PHOSPHORUS NONBESSEMER, ALL RANGES						
1925	51.46	0.075	7.82	0.71	11.57	58.3
1924	51.25	0.075	7.95	0.68	11.75	57.8
1923	51.09	0.077	7.93	0.70	11.85	57.7
1922	51.35	0.077	7.95	0.69	11.67	57.4
1921	51.23	0.075	8.01	0.73	11.95	58.2
1920	51.18	0.079	7.84	0.69	12.13	52.9
1919	50.89	0.080	7.88	0.72	12.29	52.9
1918	50.77	0.082	7.79	0.76	12.32	54.7
1917	50.90	0.082	7.58	0.73	12.62	53.9
1916	50.26	0.080	7.64	0.77	12.57	54.6
HIGH PHOSPHORUS NONBESSEMER, ALL RANGES						
1925	50.85	0.414	7.87	0.35	8.88	8.3
1924	50.86	0.402	7.88	0.40	9.43	8.9
1923	50.86	0.416	7.69	0.33	8.98	6.4
1922	50.94	0.439	7.59	0.42	8.99	7.8
1921	51.07	0.427	7.26	0.44	9.07	6.6
1920	50.91	0.414	7.68	0.40	9.30	9.4
1919	50.72	0.428	7.61	0.39	9.49	9.9
1918	50.97	0.435	7.35	0.36	9.03	8.4
1917	50.83	0.403	7.12	0.47	9.71	8.7
1916	51.17	0.413	7.28	0.38	9.44	7.6

SILICIOUS, ALL RANGES

Year	Iron, natural	Phos.	Silica	Mang.	Moisture	%, total
1925	39.91	0.055	32.37	0.29	5.99	2.1
1924	41.34	0.060	29.80	0.34	6.45	2.3
1923	42.17	0.055	29.30	0.34	6.50	1.9
1922	41.39	0.052	30.44	0.27	6.23	1.6
1921	45.50	0.052	25.29	0.27	7.31	1.8
1920	41.43	0.054	30.19	0.37	6.34	1.8
1919	41.11	0.049	30.85	0.46	6.60	1.2
1918	41.76	0.077	32.95	0.23	6.59	1.5
1917	41.61	0.060	29.83	0.32	7.25	2.0
1916	41.11	0.051	32.19	0.18	5.72	1.5
MANGANIFEROUS, ALL RANGES						
1925	43.46	0.221	7.17	6.57	12.69	4.1
1924	43.74	0.249	6.84	7.00	11.61	3.3
1923	44.03	0.266	6.75	6.36	11.23	4.1
1922	44.96	0.204	6.71	5.88	11.66	3.7
1921	46.41	0.159	7.59	4.71	13.02	1.0
1920	45.33	0.201	7.64	5.23	11.68	4.1
1919	46.43	0.142	7.32	4.35	12.49	3.7
1918	42.91	0.180	9.53	6.61	11.85	4.2
1917	44.84	0.176	9.22	6.18	10.94	2.6
1916	46.13	0.246	8.60	4.34	10.52	2.8
ALL GRADES, ALL RANGES						
1925	51.74	0.099	8.42	0.82	10.58	.....
1924	51.72	0.100	8.45	0.76	10.75	.....
1923	51.79	0.095	8.22	0.79	10.76	.....
1922	51.87	0.099	8.23	0.76	10.78	.....
1921	52.07	0.087	8.23	0.62	10.95	.....
1920	51.69	0.103	8.13	0.77	11.09	.....
1919	51.57	0.105	8.04	0.73	11.34	.....
1918	51.29	0.104	8.12	0.87	11.29	.....
1917	51.40	0.099	8.02	0.76	11.57	.....
1916	51.20	0.097	8.00	0.73	11.58	.....

News of Societies

ONE of the principal sessions at the annual meeting of the American Welding Society to be held at the Engineering Societies building, New York, April 21-23, will be a symposium on the design of welded joints in several industries. Points to be considered are stresses, accessibility and position, technique, type of joints, materials, thermal consideration, tightness and tests. The program of the meeting as just announced is as follows:

Wednesday, April 21

MORNING

Meeting of gas welding committee, S. W. Miller, chairman.

AFTERNOON

Meeting of electric arc welding committee, H. M. Hobart, chairman.

Thursday, April 22

MORNING

Business Session

Report of president.
Reports of committees.
Election of officers.

Technical Session

Paper: "Design of Welded Equipment for Chemical Plants," by H. D. Edwards, works manager, Carbide & Carbon Chemical Corp.

AFTERNOON

Technical Session

Paper: "Design of Joints in Piping Installations," by L. J. Sforzini.
Paper: "Design of Joints in Ship Construction," by J. W. Owens, director of welding, Newport News Shipbuilding & Dry Dock Co.
Paper: "Design of Welded Joints with Special Reference to Pressure Vessels," by S. W. Miller, consulting engineer, Union Carbide & Carbon Research Laboratories.
Paper: "Design of an Arc Welded Pressure Vessel," by L. H. Burkhart, chief engineer, Struthers-Wells Co.
Paper: "Design of Welded Joints for Tanks and Containers," by A. C. Vick, engineering department, Detroit Range, Boiler & Steel Barrel Co.

EVENING

Dinner-dance at Hotel Astor.

Friday, April 23

MORNING

Meeting of the American Bureau of Welding.

AFTERNOON

Inspection trip to Metal & Thermit Corp.
Meeting of board of directors.

* * *

British Institute Announces Papers

The annual meeting of the British Iron and Steel institute will be held in London at the Institution of Civil Engineers on May 6 and 7. At the opening session, Sir Frederick Mills, president of the institute, will turn the chair over to the president-elect, Sir W. Peter Rylands, managing director of Rylands Bros. Ltd., Warrington, Lancashire. At this same session the presentation of the Bessemer gold medal will be made to Sir Hugh Bell. Among the papers to be submitted are the following:

"Report on the Heterogeneity of Steel Ingots" by subcommittee of committee 5; "Coal Blending" by D. Brownlie; "Effects of Arsenic on Steel" by A. E. Cameron and C. B. Waterhouse; "Specific Resistance and Thermoelectromotive Potential of Some Steels Differing in Carbon Content" by E. D. Campbell and H. W. Mohr; "Magnetic Changes in Iron and Steel below 400 degrees Cent" by W. H. Dearden and C. Benedicks; "A Note on the Distribution of Silicates in Steel Ingots" by J. H. S. Dickenson; "Ratio of the Tensile Strength of Steel to the Brinell Hardness Number" by R. H. Greaves and J. A. Jones; "Notes on the Combustibility of Coke and Direct Reduction in the Blast Furnace" by W. W. Hollings; "Deformation Lines in Large and Small Crystals of Ferrite" by H. O'Neill; Relation between Space-Lattice Constant and Density of Iron-Nickel Alloys" by A. Osawa; "Hardening and Tempering of High Speed Steel" by A. R. Page; "Estimation of Phosphorus in Steels Containing Tungsten" by T. E. Rooney and L. M. Clark; "Effect of Mass in the Heat Treatment of Nickel Steel" by W. Rosechain, R. G. Batson and N. P. Tucker; "Hardness of Carbon Steels at High Temperatures" by I. G. Slater and T. H. Turner; "Ghost Lines and Banded Structure of Rolled and Forged Mild Steels" by J. H. Whiteley; "Influence of Segregation on the Corrosion of Boiler Tubes and Superheaters" by G. R. Woodvine and A. L. Roberts.

It is announced that the autumn meeting of the institute will be held at Stockholm, by invitation of the Swedish Ironmasters' association, from Aug. 26 to 28. The meeting will be followed by excursions to various ironworks and mines in the neighborhood of Stockholm.

Memorial services for Ralph C. Richards, an organizer and past president of the National Safety Council, were held, April 6, at the Chicago & North Western railroad station, Chicago, when a bronze tablet was unveiled. Mr. Richards, who died in January, 1925, had been with the North Western 54 years.

Convention Calendar

April 15-16—National Metal Trades association. Twenty-eighth annual convention, Hotel Astor, New York. J. E. Nyhan, Peoples Gas building, Chicago, secretary.

April 21-23—American Welding society. Annual meeting at Engineering Societies building, New York. Miss M. M. Kelly, 29 West Thirty-ninth street, New York, secretary.

April 22-24—American Electrochemical society. Meeting, Chicago Beach hotel, Chicago. Colin G. Fink, Columbia university, New York, secretary.

April 28-30—National Foreign Trade council. Thirteenth annual convention, Francis Marion hotel, Charleston, S. C. O. K. Davis, India house, 1 Hanover square, New York, secretary.

May 3-6—American Society of Mechanical Engineers. New England regional meeting, Providence, R. I. Calvin W. Rice, 29 West Thirty-ninth street, New York, secretary.

May 10-15—Association of Chemical Equipment Manufacturers Inc. Second chemical equipment and process engineering exposition, Public hall, Cleveland. Roberts Everett, 1328 Broadway, New York, secretary.

May 12—American Refractories institute. Annual meeting at Bellevue-Stratford hotel, Philadelphia. D. A. Texter, 2202 Oliver building, Pittsburgh, secretary.

May 13-15—American Gear Manufacturers' association. Annual meeting at Book-Cadillac hotel, Detroit. T. W. Owen, 2443 Prospect avenue, Cleveland, secretary.

May 17-21—National Association of Sheet and Tin Plate Manufacturers. Fourth annual meeting at Hotel Greenbrier, White Sulphur Springs, W. Va. Walter W. Lower, 421 Oliver building, Pittsburgh, secretary.

May 17-22—American Supply and Machinery Manufacturers' association. Annual convention at Hotel Statler, St. Louis. F. D. Mitchell, 1819 Broadway, New York, secretary.

May 18-20—Southern Supply and Machinery Dealers' association. Annual convention at St. Louis. Alvin M. Smith, Richmond, Va., secretary-treasurer.

May 20-21—American Society for Steel Treating. Spring sectional meeting, Hotel Bond, Hartford, Conn. W. H. Eisenman, 4600 Prospect avenue, Cleveland, secretary.

June 1-4—Society of Automotive Engineers. Summer meeting at French Lick Springs, Ind. Coker F. Clarkson, 29 West Thirty-ninth street, New York, secretary.

June 7-10—Association of Iron and Steel Electrical Engineers. Twenty-second annual convention and exposition at Hotel Sherman, Chicago. John F. Kelly, 513 Empire building, Pittsburgh, secretary.

June 9-12—National Association of Purchasing Agents. Eleventh annual convention and exposition, Ambassador hotel and auditorium, Los Angeles. W. L. Chandler, Woolworth building, New York, secretary.

June 16-18—Society of Industrial Engineers. Thirteenth national convention, Bellevue-Stratford hotel, Philadelphia. George C. Dent, 608 South Dearborn street, Chicago, executive secretary.

June 21-25—American Institute of Electrical Engineers. Annual convention at White Sulphur Springs, W. Va. F. L. Hutchison, 29 West Thirty-ninth street, New York, secretary.

June 21-25—American Society for Testing Materials. Annual convention at Chalfonte Haddon hall, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, secretary.

June 28-July 1—American Society of Mechanical Engineers. Spring-summer convention at Palace hotel, San Francisco. Calvin W. Rice, 29 West Thirty-ninth street, New York, secretary.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

CRUCIBLE STEEL CASTING CO., Milwaukee, will start production in its new foundry about May 15, with capacity of 400 tons per day, doubling the output of its former plant. The old foundry will be placed on the market when the new plant is occupied. Equipment will include two electric furnaces and complete electric annealing equipment. Albert C. Lange is president and general manager.

* * *

CONEMAUGH IRON WORKS, Blairsville, Pa., has resumed operations after considerable remodeling and reconstruction, following a fire in September, 1925.

* * *

LEININGER-KRAUSE FOUNDRY Co., 3214 Vliet street, Milwaukee, manufacturer of brass and bronze castings, which started in business recently, is specializing on church and art castings.

* * *

DETROIT STOKER CO., Monroe, Mich., has started operations in its new foundry. The foundry, pattern shop and pattern storage add about 25,000 square feet to the former plant.

* * *

PELTON STEEL CASTING CO., Milwaukee, manufacturers of electric processed steel castings, recently reorganized, has elected Arthur J. Ehne president, T. E. Ward vice president, H. A. Leekley vice president and Allen M. Slichter secretary.

* * *

NATIONAL CARBON CO., New York, has bought the battery plants of the Manhattan Electrical Supply Co. at Jersey City, N. J., and Ravenna, O., with its trade marks, patents and other assets relating to dry batteries. The same brands will be continued by the purchaser.

* * *

ESCANABA COAL & DOCK CO., Escanaba, Mich., has started complete rebuilding of its docks, July 1 being set for date of completion. The new dock will be equipped with Mead-Morrison electrically-operated coal handling plant, with 6-ton bucket, to handle 500 tons of coal per hour, and a 24-foot spread cleanup bucket. The dock will be widened from 130 to 250 feet. It will be able to handle 150,000 tons of coal per year and will have storage capacity for 100,000 tons.

* * *

MICHIGAN RAILWAY SUPPLY CO., Detroit, has been organized to handle railway supplies and track material, under the management of Maurice Mitschkun, for 18 years associated with M. Mitschkun Co., Detroit, dealers in the same line. The company's offices are at 709 Guaranty Trust building, 606 Woodward avenue, Detroit.

* * *

AMERICAN ROLLING MILL CO., Middletown, O., has started an additional building at its plant at Ashland, Ky., awarding the general contract to H. W. Cox, Ashland. The main building will be 360 feet long with main span for a 90-foot crane of 15 tons capacity with side bays of 27 and 40 feet. The addition will be used for warehouse and shipping departments.

* * *

WESTERN METAL SPECIALTY CO., Milwaukee, Wis., manufacturer of automotive and industrial stampings, sheet metal products and freight car heaters, has started a new warehouse which will be used to increase production of automotive sheet metal products. The Western company just received a large contract from the General Motors Corp. for automotive stampings. William M. Gaulke is chief engineer.

* * *

ACME FOUNDRY & MACHINE CO., Coffeyville, Kans., advises it has organized the Acme Foundry & Machine Co. of Oklahoma and has started operations of its machine shop at Blackwell, Okla., the pattern shop and foundry to be started about May 1. Mark D. Mitchell is president, C. M. Hodshire vice president, R. K. Graham secretary and E. L. Graham treasurer and general manager.

* * *

SOMMERS & SONS CO. INC., manufacturer of milk condensing machinery, 3214 Vliet street, Milwaukee, has moved its plant to Random Lake, Wis., where its operations will be continued and bronze and nickel silver castings will be added. A plant 80 x 150 feet is being built and will include a machine shop. F X. Sommers is president and C. J. Sommers vice president and general manager.

* * *

AMERICAN ENGINEERING & SALES CORP., Federal American National Bank building, Washington, has been organized with Walter N. Polakov president, Wallace Clark vice president and secretary and I. B. Richman treasurer. Branch offices have been established at 25 Fifth avenue, New York, and Rialto building, San Francisco. Foreign correspondents have been appointed in London, Paris, Milan, Warsaw and Prague. It will give service in engineering, management, patents commercial work, concessions and legal matters.

* * *

NEW ENGLAND COAL & COKE CO., will add a battery of by-product coke ovens with daily capacity of 1000 tons, according to a recent report of the holding company, the Massachusetts Gas Co. The Mystic Iron Works, which is also a subsidiary of this holding company, plans to blow in its blast furnace within 60 days, and this will call for a daily consumption of 500 tons of coke. The present capacity of the New England Coal & Coke Co. is 1700 tons daily. The new battery will consist of 55 ovens of 14-ton capacity operating on 12 hours coking time.

* * *

CHESTER BERTOLETTE SR. Daniel Bertolette and Chester Bertolette have formed a company to deal in new and used machinery, to be known as the Bertolette Used Machinery Exchange, Fourteenth and Prevost streets, Jersey City, N. J. Chester Bertolette Sr. formerly was treasurer of the New York Machinery Exchange and was one of its founders. The other members of the firm until recently were directors and officers of the Machinery Sales Co., Jersey City, selling their interests there. The Bertolette name has been known for half a century in the used machinery market.

Between 5,000,000 and 10,000,000 persons suffer nonfatal personal injuries every year, according to the National Safety council.

Industrial Men in the Day's News

Edwin S. Mills, Elected Vice President, Illinois Steel Co.

STEADY advancement to positions of increasing importance and responsibility marks his affiliation with the steel industry since 1895.

WORK is both his vocation and avocation and he is known as a man of remarkably ordered habits and strict business observance.

FOR relaxation he turns to literature and to golf. Interest in educational work finds him a trustee of Northwestern university, Evanston, Ill.

APPOINTMENT on April 8 of Edwin S. Mills as a vice president of the Illinois Steel Co., Chicago, marked further recognition accorded a true "son of the Steel corporation." Not only has Mr. Mills been affiliated with the United States Steel Corp. since the origin of that interest in 1901, but prior to that important date in iron and steel development he was associated with the Carnegie company, later included as a corporation subsidiary.

Many of the present day ironmasters have come into prominence through highly colored business vicissitudes. The career of Mr. Mills, on the other hand, is not spectacular so much as it tells a tale of hard work, simple living and steady progress. Born in New Brighton, Pa., Jan. 5, 1870, he obtained his education in the public primary and high schools of Cleveland. His interest in higher education, however, is evidenced by his being a member of the board of trustees of Northwestern university, Evanston, Ill.

Entering business in Cleveland in 1895, he at once became associated with the Carnegie Steel Co. there. Before his succeeding appointment as general manager of the Pittsburgh Steamship Co., Mr. Mills also had been made manager of sales of the Carnegie company. Later he was appointed agent of the Oliver Iron Mining Co., Duluth, another Steel corporation property. When the organization of the Steel corporation was completed, Mr. Mills was transferred to New York as assistant to the first vice president. Between 1910 and 1919 he served as sales manager for the Carnegie Steel Co. at Chicago, where he specialized in rolled steel wheels and other specialties. On March 31, 1919, he was appointed general manager of sales for the Illinois Steel Co., Chicago, which position he still retains in addition to his vice presidency.

Mr. Mills is known as a man of remarkably ordered habits. It would be hard to find one more conscientious in the observance of business hours. With him "the job" is both vocation and avocation, and not only is he well-versed in general economic and industrial affairs, but he has retained also an unusual grasp of essential detail. Although his close friends say that Mr. Mills maintains two offices—one in the Chicago "loop" and one at his home in Evanston—this has not detracted from his reputation as a voracious reader. Nor has it undermined greatly his golf score.

In addition to his connection with the Illinois Steel Co., Mr. Mills also is manager of sales in the Chicago district for the Carnegie Steel Co. and the Tennessee Coal, Iron & Railroad Co. His social activities are evidenced by memberships in the following organizations: Western Society of Engineers, Glen View Golf club, Mid-Day club, Union League club, Chicago club, Commonwealth club and Lake Shore Athletic club, all of Chicago, the Lawyers' club of New York and the Country and University clubs of Evanston, Ill.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

EDWIN S. MILLS has been elected president of the Illinois Steel Co., as more fully described on the "Industrial Men in the Day's News" page of this issue.

Willard Wilson has been elected vice president of the Tennessee Coal, Iron & Railroad Co.

J. I. Andrews has been made vice president of the American Sheet & Tin Plate Co.

Blaine S. Smith has been elected vice president of the Universal Portland Cement Co.

These promotions were announced April 8 by the United States Steel Corp., New York, of which the above companies are subsidiaries. The above men all are general managers of sales of their respective companies.

* * *

A. T. Gardiner has resigned as general manager of the American Swiss Magneto Co., Toledo, O.

* * *

Capt. Rene Fonck has become consulting engineer of Detroit Aircraft Engine Works, Detroit. He was a French aviator in the World war.

* * *

A. A. Hamerschlag, managing director of the Research Corp., New York, is expected to return from a European trip late in April.

* * *

Alexander Harper has been re-elected president of the Bristol Brass Corp., Bristol, Conn. J. R. Holley was re-elected vice president.

* * *

Sir William Ellis, past president of the Iron and Steel institute, director of John Brown & Co., Ltd., has been elected chairman of Davy Bros., Ltd., Sheffield.

* * *

F. C. Baird and W. G. Clyde will succeed J. T. O'Dell, deceased, and Homer D. Williams, resigned, as directors of the Pittsburgh, Bessemer & Lake Erie railroad.

* * *

E. G. Howell, since 1922 in charge of the scrap department of Hickman, Williams & Co., Chicago, has become affiliated with Walter Erman & Co., dealer in iron and steel, 652 McCormick building, Chicago. Prior to going with Hickman, Williams & Co. Mr. Howell was with Briggs & Turivas, Chicago, and formerly with the Republic Iron & Steel Co.

* * *

W. C. Peterson has been appointed metallurgical engineer for the Donner Steel Co. Inc., Buffalo, N. Y., with his headquarters at Detroit. Mr.

W. C. PETERSON

Peterson for many years was in charge of the metallurgical department of Packard Motor Car Co. and for the past two years has been a consulting engineer with offices at Detroit.

* * *

John H. Brewster, formerly head of the Swedish Steel Sales Co., New York, has retired from business and now is making a tour of the world. He is expected to return to this country in September.

* * *

G. Clifton Deeter has resigned as alloy specialist of American Boron Products Co., Reading, Pa., to join D. & E. Metals Co., York, Pa., as secretary and treasurer. The latter company was just organized.

* * *

Donald M. Ryerson, vice president, Joseph T. Ryerson & Son, Inc., Chicago, sailed March 31 on the steamship BERENGARIA for Europe, where he expects to remain until about June 1.

* * *

John W. Gay, formerly sales engineer, now is works manager of the Ft. Pitt Steel Casting Co., McKeesport, Pa., following recent reorganization. H. F. Stratton formally has been apointed general superintendent.

* * *

Edward T. Klee has been made assistant production manager of the Indianapolis plant of the Stutz Motor Car Co. Mr. Klee joined the company in 1912.

H. C. Kramer has been made master mechanic of the Indianapolis plant, coming from Rochester, N. Y.

* * *

E. M. Hummer, vice president and general manager of the Defiance Machine Works, Defiance, O., was to sail from New York April 14 on the AQUATANIA for Great Britain and the Continent. Mr. Hummer's address will be at the London office of the company, 2 Queens Gardens, Ealing, London.

* * *

Jesse R. Langley, in the patent department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for 14 years, resigned April 6 to accept a similar position with the Koppers Co. Since he received his electrical engineering degree from the University of Michigan in 1908, Mr. Langley has worked subsequently as civil engineer, college football coach, and assistant examiner in the United States patent office.

* * *

Leon Ehrman, recently connected with the Belfont Steel & Wire Co., has been appointed superintendent of the Mystic Iron Works to take charge of the operation of the new blast furnace which is to be blown in within 60 days.

Prior to his connection with the Belfont Steel & Wire Co., Mr. Ehrman was assistant superintendent of the Midvale Steel & Ordnance Co., at Coatesville, Pa., and before that was superintendent of the Marting Iron & Steel Co., Ironton, O.

* * *

O. C. Sheldon, formerly located at

(*Concluded on Page* 1038)

Coal Outlook Worrying Britain

Business in Iron and Steel Markets Dull, and Production Is Slowing Up—Continental Competition Renewed—Exchange Fluctuations Hamper French and Belgian Steelworks

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, April 13.—(By Cable)—Business in the iron and steel markets is dull and production is slowing up due to the unsettled outlook in the coal industry. Nothing of a definite character has been decided on in the industry assuring a peaceful continuation of production when the government's subsidy arrangement expires May 1.

Exports of pig iron from Middlesbrough in March totaled 113,213 tons. The March exports include 6120 tons shipped to the United States compared to 4000 tons in February.

Competition from continental steelmakers is reviving, and beams are being offered in the British market £1 ($4.85) below the domestic price, delivered at Birmingham. Galvanized sheets are easier. Richard Thomas & Co.'s tin plate mills and steelworks have partly suspended operations.

Reports from Paris and Brussels state fluctuations in exchange values of the franc are hampering business. Pig iron prices are firm. Berlin reports exports are slackening. Poland has purchased 2500 tons of plates from German mills to fill an order for pipe from Japan. Nails are being sold by German makers at £8 ($38.80) for delivery to the Far East.

British Market Unsettled by Strike Threats

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., April 5.—(*European Staff Service*)—The immediate danger of an engineers' lockout having been removed, manufacturers of iron and steel breathe a little more freely. The menace of a coal stoppage, however, still overhangs industry, exercising a restrictive effect on business.

The immediate effect of the crisis is unwillingness to place or accept large contracts. Some constructional engineers state that steelworks decline to take orders running from 1000 tons upwards. In pig iron a few furnaces are prepared to take the risk, one estimate placing these at about half those receiving forward offers. Makers, of course, take advantage of the strike clause; but this is of no advantage where the question of prices and supplies enter. It is well understood that the coal commission recommendations, if these are adopted, may have a very dislocating effect on supplies, and may very likely involve price alterations.

Sterling $4.86

A fact attracting some attention is the firmness of pig iron in spite of depressing circumstances. Middlesbrough makers continue at £3 10s ($17.01) for No. 3 G. M. B. It is doubtful whether the quotation of £3 17s ($18.71) for hematite is realized to any extent, most of the business being at about 6d ($0.12) below this. It is significant that, in all districts, stocks of pig iron are diminishing, although orders are almost exclusively for immediate requirements.

A circumstantial account has appeared this week of an international rails cartel said to have been agreed upon by Britain, Germany, France and Belgium. Steel makers profess to know nothing of this, and it appears to be another kite-flying expedition intended to elicit opinions. British steel makers do not take it seriously, and regard it as very unlikely to materialize, for many reasons.

Much foreign steel is coming in, but mainly on old contracts. There

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, April 12	*British* Gross Tons U. K. Ports			*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port		
Export Prices f. o. b. Ship at Port of Dispatch—By Cable										
PIG IRON	£	s	d		Francs		Francs	£	s	d
Foundry No. 3, Silicon 2.50-3.00	$17.01	3	10 0*	$15.61	455	$17.06	450	$17.50	3	12 0
Basic	16.52	3	8 0	15.09	440	17.06	450	17.01	3	10 0
Basic-bessemer	18.59	3	16 6†	14.41	420	14.21	375	18.23	3	15 0
Hematite, Phosphorus 0.02-0.05	20.53	4	4 6	19.04	555	.....	...	20.66	4	5 0
SEMIFINISHED STEEL										
Billets	$26.73	5	10 0	$20.75	605	$20.66	545	$24.30	5	0 0
Wire rods	43.74	9	0 0	27.10	790	$27.48	725	27.95	5	15 0
FINISHED STEEL										
Standard rails	$35.24	7	5 0	$28.30	825	$28.05	740	$29.16	6	0 0
Merchant bars	1.49c	6	17 6	1.14c	715	1.09c	640	1.17c	5	6 0
Structural shapes	1.33c	6	2 6	1.06c	665	1.02c	600	1.07c	4	17 0
Plates, ship, bridge and tank	1.52c	7	0 0	1.19c	745	1.15c	675	1.25c	5	14 0
Sheets, black, 24 gage	2.22c	10	5 0	2.18c	1,365	2.06c	1,210	2.53c	11	10 0
Sheets, galvanized, 24 gage, corrugated	3.42c	15	15 0	3.36c	2,100	4.08c	2,400	3.63c	16	10 0
Bands and strips	2.17c	10	0 0	1.48c	925	1.45c	855	1.54c	7	0 0
Plain wire, base	2.39c	11	0 0	1.86c	1,160	1.44c	850	1.54c	7	0 0
Galvanized wire, base	3.04c	14	0 0	2.52c	1,575	1.96c	1,150	1.98c	9	0 0
Wire nails, base	3.15c	14	10 0	2.16c	1,350	1.53c	900	1.76c	8	0 0
Tin plate, base box 108 pounds	$ 4.68	0	19 3	.....	...	.....	...	$ 6.56	1	7 0
Domestic Prices at Works or Furnace—Last Reported										Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$17.01	3	10 0	$13.89	405(2)	$13.83	365	$19.55		85
Basic pig iron	16.52	3	8 0	13.89	405(1)	13.64	360	20.24		88
Furnace coke	3.65	0	15 0	5.28	154	3.55	120	5.06		22
Billets	26.73	5	10 0	18.87	550	20.28	535	27.37		119
Standard rails	1.63c	7	10 0	1.12c	700	1.00c	590	1.46c		140
Merchant bars	1.57c	7	5 0	1.12c	700	1.01c	595	1.41c		135
Shapes	1.44c	6	12 6	1.02c	635	1.00c	500	1.42c		136
Plates, ship, bridge and tank	1.52c	7	0 0	1.24c	775	1.15c	675	1.56c		150
Sheets, black, 24 gage	2.33c	10	15 0	2.16c	1,350	1.91c	1,125	2.24c		215
Sheets, galvanized 24 gage, corrugated	3.44c	15	17 6	3.28c	2,000	4.00c	2,350	3.96c		380
Plain wire	2.39c	11	0 0	1.84c	1,150	1.45c	850	1.85c		177
Bands and Strips	2.28c	10	10 0	1.39c	870	1.40c	825	1.63c		156

*Middlesbrough; †Scotch foundry iron; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 15s 0d ($3.65) f. o. b. Ferromanganese £14 15s 0d ($71.69) f. o. b. German ferromanganese £14 10s 0d ($70.47) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

is not much evidence of new buying on a large scale. A report from a usually well-informed source in Paris states, "The French works are not at present on the export market, their books being filled for several months ahead." Rather low offers are coming from Belgium, and Germany has been trying this week to sell what appears to be a spot lot of girder plates to a tensile of 28/32 tons with an elongation of 20 per cent in 8 inches, at the firm prcie of £5 7s 6d ($26.12) per ton f.o.b. Antwerp. Delivery is promised within three or four weeks. The same merchant offers joists at £4 18s ($23.81) per ton f.o.b. Antwerp which would work out at £6 3s ($29.88) delivered or about £1 ($4.86) below the British figure. Apparently, there is not much continental semifinished steel to be had, at attractive prices. The slump in the Belgian franc while bringing a few low offers, has rather checked business than otherwise, many foreign makers having doubts as to their costs of production, especially from the point of view of wages. A number of foreign offers have been withdrawn, and £5 7s 6d ($26.12) delivered for foreign billets all things considered, is not a strongly competitive figure, with English steel at £6 ($29.16) with delivery advantages.

The situation is rather different in South Wales, where the tin plate price is finely cut at 19s 3d ($4.67) per box, and it is said that if English steel at £6 5s ($30.37) is used, profit making is impossible. The Welshmen can buy foreign tin bars at £5 5s ($25.51), their position on the coast enabling them to avoid railway rates, and a good deal of this foreign material is used. But some works bar this imported steel, and the Welsh steel works have rather less material to dispose of in the open market than they had a month or two ago.

France Finds Exports Are Reduced

PARIS, April 5—(*European Staff Service*)—The attention of European metallurgists has been centered on organization of international syndicates. Now that the Irma or International Rail Manufacturers' association is organized industrialists are discussing the possibility of grouping manufacturers of other products with the idea of fixing tonnage allotments and prices. This cannot be accomplished, however, until the countries concerned have first organized their domestic markets. In all probability, progress in this direction will be slow.

The fall of the French ministry and Briand's troubles at Geneva with the Locarno peace pact and the league of nations has disturbed business. The political situation has a great influence on exchange rates, and as business conditions in France are largely a question of exchange it is difficult to forecast the future. The outstanding feature affecting the French market during the past fortnight is the fall in value of the Belgian franc. The sudden decline of the Belgian franc came as a surprise. This movement has helped Belgian metallurgists on foreign business and has cost French exporters considerable business.

Pig iron continues active. Prices remain unchanged. French furnaces are booking export orders for Lorraine No. 3 foundry on the basis of 340 francs ($11.90) f.o.b. furnace. As it costs about 40 francs ($1.40) per ton to move this iron to the port and the ocean rate to New York and other Atlantic sea ports in that vicinity is $3, the cost for this grade c.i.f. New York should be approximately $16.30 per metric ton.

Semifinished steel products are somewhat easier. Several mills are offering prompt shipment. Basic bessemer blooms are being done at £3 19s ($19.15) f.o.b. Antwerp. Billets are somewhat firmer, most makers quoting £4 8s ($21.30) on mixed specifications. Sheet bars average £4 13s ($22.55).

French mills are meeting keen competition from every quarter on finished steel products. Belgium's position has been helped by the decline of the Belgian franc, and Germany is quoting what are now becoming known as "starvation prices" by her competitors. Westphalian mills have offered merchant bars in London at £5 3s ($24.85) f.o.b. Hamburg. Lorraine mills are trying to obtain £4 16s $23.25) for structural shapes. German mills are shading this figure. Rods ¼-inch are quoted at £5 15s ($27.80) and 3/16-inch bring £5 17s 6d ($28.45). Heavy plates are again in demand after being stagnant for months. Plates 3/16-inch thick and heavier now average £5 8s ($26.15) f.o.b. Antwerp.

Franc—$0.035

Belgian Production Up

Brussels, April 5—(*European Staff Service*)—A marked improvement was noted in the iron and steel production of Belgium for February. It will be recalled that January figures were the lowest on record for several years owing to serious floods which impaired industrial activities at the beginning of the month, and to the fact that the Charleroi plants had only commenced to resume operations. In February the production of pig iron totaled 202.400 metric tons compared with 137,790 tons in January. March 1, 45 blast furnaces were operating, 8 stacks having been blown in. Output of steel ingots and castings was 167,360 tons, against 116,180 tons in January. The February figure included 161,420 tons of steel ingots and 5940 tons of steel castings. The output of finished steel was 181,900 tons, compared with 106.260 tons in January.

Production of coke was 347,900 metric tons in February, against 321,-220 tons in January. The following table shows production figures for the two first months of the year compared with the monthly averages of previous years, in metric tons:

Mon. ave.	Coke	Pig iron	Steel ingots and castings	Finished steel
1913	293,585	207,055	205,550	154,820
1923	348,330	178,995	191,410	161,950
1924	346,650	234,000	238,380	198,115
1925	342,360	211,785	200,880	164,940
1926				
Jan.	321,220	137,790	116,180	106,260
Feb.	347,900	202,400	167,360	181,900

British Export Prices on Lower Level

London, April 5.—(*European Staff Service*)—Board of trade returns for February 1926 give average British export prices per gross ton for certain iron and steel products, compiled from actual contracts which were made several months ago. This accounts for the difference between these quotations and the base prices regularly quoted in our columns.

The following table shows the price of each of the seven principal commodities exported from Great Britain. Compared with those prevailing in the corresponding period of last year, prices have dropped with the exception of that of ferromanganese. They were generally higher than those for January 1926.

The price of foundry pig iron was 15s 9d ($3.80) less than in February 1925 and 5s 3d ($1.25) more than in January 1926. Ferromanganese was £1 4s 8d ($5.95) more than a year ago and 8s ($1.95) more than in the previous month. Carbon billets were £1 8s 4d ($6.90) less than in February 1925 and 6s 9d ($1.65) more than in January 1926. Beams were £2 1s 5d ($10.50) less than a year ago and 6s 1d ($1.45) more than in the previous month. Galvanized sheets were £1 0s 7d ($5) less than in February 1925 and 1s 5d (35c) more than in January 1926. Tinplates were £3 6s 4d ($16.15) less than a year ago and 7d (13c) more than in the preceding month. Plates were £1 19s 8d ($9.60) less than in February 1925 and 6s 2d ($1.50) less than in January 1926.

February, 1926

	£	s	d	$
Foundry pig iron	4	3	0	20.10
Ferromanganese	16	14	0	80.80
Carbon billets	13	14	9	66.40
Beams	8	15	7	42.50
Galvanized sheets	18	9	5	89.25
Tinplate	21	3	0	102.60
Plates	9	12	4	46.55

Nortrilor Is Disbanded

Paris, April 5.—(*European Staff Service*) It is announced that the French export organization known as Nortrilor has gone into voluntary liquidation. This organization included Forges et Acieries du Nord et de l'Est, Societe Metalurgique de Pont-a-Vendin, Societe des Usines Metalurgique de la Basse-Loire, Societe des Mines de Fer de Segre, Societe des Forges et Acieries du Nord et Lorraine, and Societe Sarroises Neunkircher Eisenwerk et Momburger Eisenwerk. The dissolution of this organization is probably the result of the recent liquidation of the Societe des Usines Metallurgique de la Basse-Loire. Each of the remaining companies has now resumed its independence.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

BIRMINGHAM, ALA.—Mechanical Products Co. Inc. has been incorporated with $10,000 capital to manufacture electrical devices by L. R. Quinn, 2109 Sixteenth avenue, and others.

OAKLAND, CALIF.—Gantz Machine Pipe Co., 1815 East Twelfth street, will build a 1-story machine shop at Peralta and Twenty-second street.

BOULDER, COLO.—Superior Metal Products Co. Inc., H. H. Donnelley president, will build a plant 50 x 50 feet for the manufacture of automobile tire chains.

BOULDER, COLO.—Neverslip Tire Chain Co. Boulder National Bank building, is having plans made for a plant for production of tire chains.

PUEBLO, COLO.—E. M. Klett, care Pueblo Commercial club, is forming a company to establish a plant for manufacturing wire brushes and similar products, two stories, 100 x 150 feet.

BRISTOL, CONN.—F. A. Day Co., Frederick A. Day president, Mellen street and Riverside avenue, screw machine products, will build a 2-story plant 24 x 74 feet.

NEW BRITAIN, CONN.—Landers, Frary & Clark are inquiring for structural steel for a plant addition.

WASHINGTON—The Potomac Electric Power Co. is inquiring for steel for a power house addition.

DELRAY, FLA.—Florida East Coast Septic Tank Co. has bought a site on Lowry avenue and will build a plant for the manufacture of sewage apparatus. Lee M. Pierce is general manager.

ALBANY, GA.— Zettie-Jones Co. will help equip an automobile assembling plant for which machine equipment will be required.

CHICAGO—Oil Heating Co., C. E. Shields manager, 215 North Michigan avenue, will build a 1-story plant for production of heating devices.

CHICAGO—Argo Iron & Metal Co., 1662 Elston avenue, will build a 2-story addition for storage purposes. General contract to Schuetz Construction Co., 3620 Kilbourne avenue.

CHICAGO—Autoflex Co., 2514 West Harrison street, has been incorporated with $10,000 capital to manufacture drying and ventilating devices by A. P. Belanger, John R. Upton, Charles J. Efner and Arthur E. Claussen, 2124 Cleveland avenue.

CHICAGO—Vaporator Mfg. Co. 5943 West Division street, has been incorporated with $20,000 capital to manufacture radiator cabinets, covers, shields, furniture and similar devices by George C. Geier, 77 West Washington street, and associates.

CICERO, ILL.—Stafford Sales Co., 6301 South Park avenue, Chicago, automobile bumpers, has bought site and is planning a plant.

DEKALB, ILL.—Creamery Package Mfg. Co., E. W. Chandler president, 67 West Kinzie street, Chicago, will build a 1-story addition to its plant.

EVANSTON, ILL.—National Biscuit Co. has awarded a contract to R. C. Weiboldt, 1435 West Van Buren street, Chicago, for a 3-story machine repair shop for service to its own equipment.

Where additional information is presented, reference is made to date of issue in which previous item appeared.

MOLINE, ILL—Moline Foundry & Machine Co. will build a 3-story foundry and machine shop at Fifth street and Third avenue, 70 x 100 feet. S. S. Hoffman is president.

ANDERSON, IND.—Barber Mfg. Co., F. Barber general manager, will build a 1-story machine shop addition 35 x 200 feet.

ANDERSON, IND.—Anderson Tool & Die Co. has been incorporated with $25,000 capital to manufacture factory supplies and materials by Charles I. Smith, Weir M. Miley Isaiah Miley, Thomas M. Jones and Edward S. Ridley.

INDIANAPOLIS, IND.—Rush Pump Co. has been incorporated with 2500 shares common stock no par value to manufacture gasoline and oil pumps by Leo E. Rush, Jacob H. Rush, Walter C. Holmes, Vadia M. Hall and Joseph H. Rush.

INDIANAPOLIS, IND.—William H. Johnson & Sons Co., 330 East St. Joseph street, heating and ventilating equipment, will build a 2-story addition 60 x 65 feet, for which equipment will be required. General contract to Leslie Colvin, Continental Bank building.

Many Exports Set New Records in 1925

Washington, April 13.—Many high records of exports in 1924 were eclipsed in 1925 according to analysis of foreign trade just completed by the foreign commerce department of the United States Chamber of Commerce. The whole group of machinery and vehicles showed a record increase in 1925 with $719,839,000, a 31 per cent gain over the 1924 total of $549,130,000. A 30 per cent gain was registered in agricultural machinery with a value of $77,937,000. Adding and calculating machine exports gained 53.1 per cent in quantity and 37.9 per cent in value over 1924.

The largest number of automobiles ever exported was shipped in 1925, 302,924 having a valuation of $222,600,000. Cutlery exports showed an increase in 1925 of 41.4 per cent in value over 1924. Exports of zinc ore, concentrates and dross in 1925 exceeded all previous marks, and totaled 169,959,000 pounds, valued at $4,845,000. Brass and bronze shipments of 120,161,000 pounds in 1925 were the heaviest since 1918.

WABASH, IND.—G. M. Diehl Machine Co., will build a 1-story addition 45 x 125 feet. General contract to Floyd Webb, Wabash.

CEDAR RAPIDS, IOWA—Quaker Oats Co. has awarded general contract to the Leonard Construction Co., 37 South Wabash avenue, Chicago, for addition to plant including 84 grain storage tanks 100 feet high, at cost of $3,000,000. George Laird is manager.

MARSHALLTOWN, IOWA—C. A. Dunham Co. has awarded general contract to C. F. Remer Co., for a 1-story concrete and brick foundry to cost $12,000.

NEW HAMPTON, IOWA—Northeastern Iowa Power & Light Co. is having plans made for power plant near New Hampton to cost $200,000.

SIOUX CITY, IOWA—Hopper Furnace Co. has let general contract to B. E. Short, 418 Court street, for 4-story, 50 x 150, reinforced concrete addition to factory to cost $60,000. C. T. Hopper is president.

WHITTEMORE, IOWA—Bids are being taken by city for Diesel engine for municipal power plant to cost $10,000.

COVINGTON, KY.—American Metal-Craft Works & Sales Co. has been incorporated with $10,000 capital by W. T. Hutcheson, A. P. Hutcheson and R. W. Bledsoe.

LEXINGTON, KY.—Lexington Engine & Machine Co. has been incorporated with $25,000 capital by R. E. Monroe president, 502 Fayette building, and has taken over Lexington Engine & Boiler Works. Will add new departments and repair automobile bodies and fenders.

BOSTON—National Co., 110 Brookline street, Cambridge, W. A. Ready president, will build a 2-story addition 45 x 95 feet for the manufacture of machinery.

BOSTON—The Metallurgical Research Co. has been incorporated with $100,000 capital by Leon L. Faux, South Hanson, Mass., James M. Curley, Jamaica Plain, Mass., Henrietta D. Duren, Hanover, Mass., and Percy A. Guthrie of Boston.

FRAMINGHAM, MASS.—Guerney Heater Mfg. Co. will build an addition for use as a foundry.

MILFORD, MASS.—Novelty Mfg. Co. Inc., foundry and machine shop, has been formed with $50,000 capital by Frederico DeFrancesco, Joseph Abiuso, Rudolph Mainini, Francesco Eadaraola, Enrico Iacovelli, all of Milford, and Victor W. Collier of Hopedale, Mass.

WINCHESTER, MASS.—Bay State Saw & Tool Co., Main and Lake streets, Edward P. Bailey manager, will rebuild its burned plant.

BENTON HARBOR, MICH.—Page Water Tube Boiler Co., M. E. Page, president, 815 Larrabee street, Chicago, has let general contract to Max Stock, St. Joseph, Mich., for a 1-story boiler factory.

BENTON HARBOR, MICH.—Max W. Stock & Sons have been awarded a contract for two factory units for Consolidated Boilers Inc., which is removing its plant from Chicago.

CHANNING, MICH.—Chicago, Milwaukee & St. Paul railroad will rebuild roundhouse and shops recently destroyed by fire.

(*Concluded on Page* 1039)

Men of Industry

(*Concluded from Page* 1034)

Worcester, Mass., as advertising manager of the Riley Stoker Corp., has been transferred to the Cincinnati office of that company as district manager. Mr. Sheldon has been associated with the Riley corporation for ten years. Prior to his appointment as advertising manager he was employed in the engineering department of this company.

C. L. Smith, formerly district manager of the Cincinnati office, has been transferred to the Chicago office as district manager.

* * *

Avery Adams has been appointed assistant general manager of sales of the Trumbull Steel Co., Warren, O. Mr. Adams succeeds Arthur Long who recently became identified with the Youngstown Sheet & Tube Co.

* * *

George L. Gordon, brother of Frank H. Gordon, general manager of sales for the Lukens Steel Co., Coatesville, Pa., has been appointed assistant general manager of sales for that company.

* * *

Arthur T. Clarage, president of the Columbia Tool Steel Co., Chicago Heights, Ill., addressed the Chicago chapter of the American Society for Steel Treating, April 8, speaking on "Alloy and Carbon Steels in 1926." The talk covered various phases of manufacture and sale of tool steel for the assistance of buyers in making selections.

Quality of Iron Ore Is Maintained

(*Concluded from Page* 1030)

58.87 per cent, while the Menominee was lowest with 49.76 per cent. The proportion of phosphorus in the Vermillion range's ore was 0.084 per cent, and in the Menominee range ore 0.053 per cent. The Menominee range's percentage of phosphorus was the lowest in the list of the ranges. The percentage of phosphorus in all of this grade was 0.075.

In the analyses of silicious ore the feature is the decrease in iron content, from 41.34 per cent in 1924 to 39.91 per cent in 1925. The proportion of silica increased from 29.80 to 32.37 per cent. Some of the silicious ore shipped in 1925 ran as high as 50 per cent silica. The relative importance of this ore is indicated by the fact that in 1925 shipments were 2 per cent of the grand total.

In manganiferous ore averages there was a slight increase in the amount of manganese. Complete data on all shipments have been issued by the Lake Superior Iron Ore association, Cleveland.

Obituaries

CLARENCE PRICE, formerly vice president and director of the American Car & Foundry Co., New York, died April 2 at his home there, aged 63. Mr. Price was reared in Cincinnati and graduated from Princeton university in 1885. He was assistant postmaster of Cincinnati during President Cleveland's second administration. Mr. Price went to Chicago as purchasing agent of the Chicago & Alton and in 1903 went to New York as vice president of the Car & Foundry company. He retired from active duty several years ago.

* * *

Claude Johnson, managing director of the Rolls-Royce Co. since its inception, died in London, April 11.

* * *

Auras G. Dawson, 60, for ten years secretary and treasurer of the Apperson Automobile Co., Kokomo, Ind., died recently in that city.

* * *

Charles S. Orne, president of the Central Steel & Supply Co., Chicago, and purchasing agent of the Streator Car Co., that city, died April 10 of a cerebral hemmorrhage.

* * *

Francis E. House, president of the Duluth & Iron Range railroad, subsidiary of the United States Steel Corp., died at Janesville, Wis., April 3, at the age of 70 years. He became president of the Duluth road in 1901.

* * *

Ellwood G. Wright, retired vice president and general superintendent of the Southwest Pennsylvania Pipe Line Co., Pittsburgh, died at his residence in that city April 4. Mr. Wright had been engaged in pipe line work in the eastern oil fields from the early seventies to his retirement in 1920. Mr. Wright was born in Lancaster county, March 31, 1847.

* * *

Sigmund V. Huber, consulting mechanical engineer, died at his residence in Pittsburgh April 8. He was born in Switzerland June 1, 1858. He was educated there, coming to America at the age of 21. Until his retirement in 1907 he was one of the most prominent engineers in the Pittsburgh district. He then established a residence in Los Angeles but returned at frequent intervals to Pittsburgh for development work on automatic control, being secretary of the Pittsburgh Automatic Train Control Corp. Mr. Huber was a member of the Engineers' Society of Western Pennsylvania, and the Pittsburgh Athletic association.

* * *

Mathew Key Garrett, aged 65, general assistant treasurer of the Union Switch & Signal Co. at Swissvale, Pa., died April 6 at his residence in Wilkinsburg, Pa., After completing his education he joined the freight department of the Allegheny Valley railroad at Oil City. In 1880 he became connected with the Westinghouse Air Brake Co. as assistant general storekeeper, going from various positions to the one he occupied when he died.

* * *

John Joseph Charles, aged 70, since 1915 president, Hibbard, Spencer, Bartlett & Co., Chicago, hardware warehouse interests, died April 7 in Pasadena, Calif. Mr. Charles was born at Williamsport, Md., in 1856 and first was associated with John V. Farwell & Co., Chicago, and later with the Pullman Co. He went with the Hibbard company in 1873 and had been active with that interest until last January, when he left Chicago.

* * *

H. Benson Wiese, secretary of the Parkesburg Iron Co., Parkesburg, Pa., died of heart trouble at his home there March 29, after an illness of nine months. Mr. Wiese was born and spent his early life in Bordentown, N. J. Before taking charge of the knobbling fires and bar mills of the Parkesburg company, in January 1900, Mr. Wiese was assistant supervisor of the Pennsylvania railroad at Parkesburg. For many years Mr. Wiese has been secretary of the Parkesburg company and in charge of purchases. His son, J. Frederick Wiese, has been western representative of the company for a number of years.

Construction and Enterprise

(Concluded from Page 1037)

DEERFIELD, MICH.—Cooper Steel Spring Co., manufacturer of automobile springs, is having plans made for additions to its plant.

DETROIT—Detroit & Michigan Stove Co., William T. Barbour manager, 6900 East Jefferson avenue, has let contract to Walbridge Aldinger Co., 2356 Penobscot building for a 1-story addition 60 x 140 feet.

DETROIT—Elwood Machine & Tool Co. has been incorporated with $30,000 capital to manufacture tools and dies by W. T. Elliott, L. D. Thomas and W. E. Mettler, 995 Sherman street.

DETROIT—Bids are being taken by the Minnesota Mining & Mfg. Co., Seventh and Fauquier streets, St. Paul, for concrete and steel factory at Detroit, to cost $65,000. Toltz, King & Day Inc., thirteenth floor, Builders Exchange, St. Paul, are the architects.

ESCANABA, MICH.—Escanaba Coal & Dock Co. will rebuild its entire plant this spring, with modern handling and conveying machinery.

FLINT, MICH.—A. C. Spark Plug Co., A. Champion president, Industrial and Harriet streets, has let general contract to W. E. Wood Co., 1805 Ford building, Detroit, for a 1-story plant addition.

GRAND RAPIDS, MICH.—Keeler Brass Co., Godfrey avenue, will build a 2-story addition furnishing 40,000 square feet of space.

NEWARK, N. J.—Pneumatic Ejecters has been incorporated with $75,000 capital to manufacture machinery by Frank J. Koehn, Newark; Charles R. Allison and A. M. Klein,

Industrial Business Changes

OHIO ELECTRIC & CONTROLLER CO., Cleveland, has appointed Railway Power & Engineering Corp. Ltd., 133 Eastern avenue, Toronto, Ont., and Industrial Supply Co., Brown-Marx building, Birmingham, Ala., as sales representatives.

* * *

Hoosier Steel Co., Indianapolis, has removed to a new location at 958 West New York street.

* * *

B. Katchen Iron Works, 107 Hunterdon street, Newark, N. J., has moved to larger space at 149 Shaw avenue.

* * *

W. G. Nagel Electric Co., Toledo, O., has changed its name to Lake States General Electric Supply Co.

* * *

Magee Furnace Co., 38 Union street, Boston, has removed its general offices to its plant at Taunton, Mass., maintaining its show room at the former address.

* * *

Key Boiler Equipment Co., East St.Louis, Ill., is the name recently adopted by the St.Louis Pressed Steel Co., manufacturer of stampings.

* * *

Ziv Steel & Wire Co., Chicago, dealer in tool steel, formerly at 4413 West Kinzie street, has moved to 2945 West Harrison street.

* * *

Sommers & Sons Co., manufacturer of milk condensing machinery, formerly at 3214 Vliet street, has removed to Randon Lake, Wis.

* * *

Black & Decker Mfg. Co., Towson, Md., has established the Black & Decker Mfg. Co. Ltd., London, Eng., with Cecil M. Peter managing director.

* * *

Riverside Boiler Works Inc., 491 Main street, Cambridge, Mass., has established offices at 240 Main street, in the Manufacturers Bank building.

* * *

Republic Iron & Steel Co., has removed its Chicago sales offices from 1008 McCormick building, 332 South Michigan avenue, to room 561 in the same building.

* * *

Saco Lowell Shops, manufacturer of textile machinery, has removed its general offices from the First National bank building, Boston, to its plant at Newton, Mass.

* * *

Patten Mfg. Co. and Street Bros. Machine Works, Chattanooga, Tenn., have merged under the name of the latter. Production of hoisting machines will be continued in both plants.

* * *

Arthur H. Pitz has bought the interest of his partner, Oliver McMullen, in the firm of McMullen & Pitz, marine contractors and engineers, Manitowoc, Wis., becoming sole owner.

* * *

Air Preheater Corp., Wellsville, N. Y., is the name of the new company taking over the business of James Howden & Co., manufacturer of preheaters for furnaces and boilers.

* * *

West Allis Iron Works, Seventy-fifth avenue and Elm street, West Allis, Wis., has been bought from C. W. Schouten by new interests and the Zenith Foundry Co. of West Allis has been organized to take over and operate the plant. W. R. Tanner, Edward T. Freeman and Clarence H. Mueller head the new company.

* * *

New York offices of the Cleveland Crane & Engineering Co. and the Cleveland Punch & Shear Works, Wickliffe. O., have been moved from 2024 to 1924, 30 Church street.

* * *

Niles Tool Works Co. division and Pratt & Whitney division of the Niles-Bement-Pond Co. will move their Cleveland offices and salesroom from West Superior avenue to 1433 East Twelfth street.

* * *

American Bosch Magneto Corp. has appointed E. A. Bowman, Inc., Detroit, its distributor of automotive products. The Bowman Co. also has taken representation of the Black & Decker line of electric drills.

* * *

U. T. Hungerford Brass & Copper Co., New York, has opened a warehouse at 312-314 North Second street, St. Louis, in its own building, where a full line of its materials will be maintained to supply southwestern territory.

* * *

Fagersta Bruk Steel Works of Sweden has appointed the Swedish Steel Mills, American Agency Inc., Grand Central Terminal building, New York, its American agency, succeeding John H. Brewster. C. J. Hoyland is president. The company imports steel from the Swedish producer and it is sold from warehouse by Swedish Steel Sales Co., Brooklyn, N. Y.; Ziv Steel & Wire Co., Chicago, and Western Purchasing Co., El Paso, Tex.

New York. George F. Allison, New York, is attorney.

UNION CITY, N. J.—G. W. Haas Iron Works has been incorporated with $25,000 capital by George W. Haas, M. L. Haas and Walter Haas, Weehawken, N. J. Francis H. McCauley, Weehauken, is attorney.

ALBANY, N. Y.—The International Harvester Co. is inquiring for structural steel for a plant building here.

ALBANY, N. Y.—McArdle Iron & Metal Co. has been incorporated with $100,000 capital to operate a machine shop by M. M. Murray, M. M. McArdle and S. H. McArdle. Tobin, Wiswall, Walton & Wood, Albany, are attorneys.

ALBANY, N. Y.—Townsend Furnace & Machine Shop Co. has been incorporated with 3000 shares common stock no par value by R. K. Townsend, F. Townsend and B. J. Savage. Cooper, Erving & Savage, Albany, are attorneys.

BROOKLYN, N. Y.—National Auto Products Co. has been incorporated with $10,000 capital by S. Richman, F. Leffe, and P. Zimmerman. C. Rothenberg, 105 Court street, is attorney.

BROOKLYN, N. Y.—Greenpoint Iron & Pipe Co., 330 Graham avenue, will build a 1-story plant 80 x 120 feet, from plans by Murray Klein, 39 Graham avenue.

BROOKLYN, N. Y.—Mechanical Springs Mfg. Co. has been incorporated with $5000 capital to manufacture springs by J. Starsiler, L. Markowitz and J. Markowitz. P. Kahan, 217 Havemeyer street, is attorney.

BROOKLYN, N. Y.—John Hassell Inc., Oakland and Clay streets, wire nails and rivets, has let contract for 3-story addition 75 x 100 feet to the Barney-Ahlers Construction Co., 110 West Fortieth street.

BUFFALO, N. Y.—Kelley Electric Machine Co., 287 Hinman avenue, is building a brick machine shop.

BUFFALO—International Welding and Cutting Exposition has been incorporated with 50 shares no par value by E. E. Balser, and C. Foltz. M. Kimball, Buffalo, is attorney.

BUFFALO, N. Y.—Republic Metalware Co., 90 Alabama street, has plans for alterations and additions to its plant and installation of additional equipment .

BUFFALO—E. B. Machine Corp. has been incorporated with $50,000 capital by J. Eppolito, L. J. Eppolito and W. P. Eppolito. Lansa, Beil & Montesano, Buffalo, are attorneys.

CANANDAIGUA, N. Y.—Rochester Top Lift Co., 167 Ames street, Rochester, N. Y., Michael O'Brien manager, will build a 1-story plant 42 x 159 and 42 x 58 feet.

CANASTOTA, N. Y.—Rex-Watson Corp. has been incorporated with $25,000 shares no par value to manufacture dump wagons by L. S. Chapman and H. J. Clark. C. R. Chapman, Syracuse, is attorney.

MIDDLETON, N. Y.—The Clemson Saw Co. has placed steel for a factory building, through H. H. Smith, Inc., general contractor.

NEW ROCHELLE, N. Y.—Westchester Automatic Heat Inc., 13 Huguenot street, has been incorporated to manufacture oil burners and equipment. It will equip a plant for their production.

NEW YORK CITY—The Consolidated Gas Co. has closed on reinforcing bars for additional work at its Hunts Point station.

NEW YORK—The Phoenix Utility Co., 61 Broadway, is inquiring for 100 tons of steel for a boiler house at Pine Grove, Pa.

NEW YORK—New York Telephone Co., 15 Dey street, is having plans made for a power plant at White Plains, N. Y.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

Pennsylvania, No. 1	$43.00 to 45.00
Pennsylvania, No. 2	35.00 to 40.00
Ohio, No. 1	43.00 to 46.00
Ohio, No. 2	38.00 to 40.00
Illinois, No. 1	40.00 to 43.00
Illinois, No. 2	35.00 to 38.00
Kentucky, No. 1	43.00 to 45.00
Kentucky, No. 2	40.00 to 43.00
Missouri, No. 1	43.00 to 46.00
Missouri, No. 2	35.00 to 38.00
Maryland, No. 1	43.00 to 47.00
Maryland, No. 2	39.00 to 42.00

SILICA BRICK

Pennsylvania	40.00
Chicago	49.00
Birmingham	48.00 to 52.00

MAGNESITE BRICK

Per Net Ton Seaboard Base

9 x 4½ x 2½	65.00

CHROME BRICK

(Per Net Ton)

9 x 4½ x 2½	45.00

NEW YORK—New York Edison Co., 130 East Fifteenth street, is having plans made for a power substation at 22 East Thirty-third street.

NEW YORK—Biltrite Pressing Machinery Co. has been incorporated with $20,000 capital by W. Goldman, B. Gleich and T. F. Casper. E. I. Herbst, 116 Nassau street, is attorney.

NEW YORK—Pioneer Metal Products Corp. has been incorporated with $15,000 capital by S. B. Beliaeff, J. Frankler and J. Masin. P. L. Liebman, 302 Broadway, is attorney.

NEW YORK—Silvercraft Mfg. Co. has been incorporated with $1000 capital to manufacture metal specialties by J. Karras, and J. Sterner. G. Hirsch, 1440 Broadway, is attorney.

NEW YORK—The New York Edison Co. has closed on 1600 tons of steel to the American Bridge Co. for an addition to East river power house.

NEW YORK—The United Verde Copper Co., 111 Broadway, has awarded 1100 tons of structural steel to the McClintic-Marshall Co. for a concentrating plant at Clarksdale, Ariz.

NEW YORK—Radio Therma Mechanical & Electrical Devices has been incorporated with $20,000 capital by S. Mendel, L. Klein and J. S. Epstein. Epstein & Bros., 2 Rector street, are attorneys.

NEW YORK—American Super Iron Co. has been incorporated to operate mines, with $100,000 capital, by G. C. Devol, F. E. King, and T. Berthold. Blackman, Pratt & Koehler, 61 Broadway, are attorneys.

NEW YORK—W. S. Emery Hinge Corp. has been incorporated with $1200 capital by H. C. Thompson, J. P. Baltzer and A. R. Moynahan. W. D. McNulty, 141 Broadway, is attorney.

NEW YORK—Florentine Craftsmen has been incorporated with $50,000 capital to manufacture metal specialties by V. A. R. Primavera and M. L. Primavera. C. A. Brooks, 111 Broadway, is attorney.

NEW YORK—Balloffett Diamond Wire Dies Co. has been incorporated with $10,000 capital to manufacture diamond draw plates by A. M. Balser, Al Epstein and D. Lazerus. Karleson & Karleson, 1440 Broadway, are attorneys.

NEW YORK—J. E. Beggs Co. has been incorporated with $5000 capital to manufacture machinery by J. M. Beggs, A. Casazza and W. A. Vanness. Vanness & Vanness, 220 Broadway, are attorneys.

NEW YORK—Jack-Tel-Hydro Corp. has been incorporated with $30,000 capital to manufacture lifting jacks D. H. Levin, A. Levin and G. Prall. I. Neuwirth, 291 Broadway, is attorney.

NEW YORK—Burloy Building Products Co. has been incorporated with $100,000 capital to manufacture metal cabinets by J. C. Dressel, C. A. Levy and S. Lewis. Levy & Levy, 302 Broadway, are attorneys.

NEW YORK—Phelps Dodge Corp., 99 John street, will build a smelter at Douglas, Ariz. About 2500 tons of steel is required for this project and has been awarded the Kansas City Structural Steel Co.

NEW YORK—Period Bronze Studios has been incorporated with $20,000 capital to manufacture electric fixtures by L. Katz, M. Sternberg and M. Oseff. S. Y. Gitlin, 16 Court street, Brooklyn, is attorney.

NEW YORK—Atlas Combustion Co. has been incorporated with $10,000 capital to manufacture combustion systems by R. E. Marion and E. A. Woolson. S. R. Golding, 342 Madison avenue, is attorney.

NEW YORK—Cahill & Bua has been incorporated with $10,000 capital to manufacture shovels by J. G. Cahill, J. A. Bua and J. J. Molinari. W. J. H. Molinari, 799 Broadway, is attorney.

NEW YORK—Burner Development Corp. has been incorporated with $200,000 capital to manufacture machinery by G. Siegel, L. Singman and R. Lefkowitz. M. & S. Meyers, Times building, are attorneys.

NEW YORK—Drill Steel Sharpening Corp. has been incorporated with 200 shares no par value by J. Mertens Jr., C. B. McInnis and G. Lieberman. Holmes, Paul & Havens, 15 William street, are attorneys.

NEW YORK—Fur Products Machine Co. has been incorporated with 25 shares common stock no par value to manufacture engines and boilers by S. Feinstein, H. Ross and R. Talkovsky. Aarons & Herbst, 291 Broadway, are attorneys.

NEW YORK—United Hoisting Co., 310 West Sixty-fifth street, George S. Daso president, has been incorporated to manufacture gasoline and electric hoists and has taken over the plants of the White Hoist & Machine Co. and the Thomas & Buckley Hoisting Co.

NEW YORK CITY—The Phoenix Utility Co., 61 Broadway, is inquiring for steel for a hydroelectric power plant development in South Carolina, for which considerable conveying equipment will be required. This company is also figuring on considerable equipment for the Lewistown hydroelectric plant.

OSWEGO, N. Y.—Otis Sawyer Boiler & Foundry Co., William Sawyer manager, will build a 1-story boiler shop and foundry 50 x 50 and 80 x 120 feet. General contract let to Peter Raby Construction Co.

SENECA FALLS, N. Y.—Dobbie Foundry & Machine Co., J. Dobbie Sr., manager, will build a 1-story structural shop 80 x 200 feet. General contract to Laur & Mack, 1400 College avenue.

SYRACUSE, N. Y.—Pneumice Oil Burners has been incorporated with $250,000 capital by G. R. Milks, and H. C. Griffith. L. A. Murphy, Syracuse, is attorney.

LA GRANGE, N. C.—Hardy & Newsom Inc., machinery, has been incorporated with $250,000 capital by H. F. Hardy and W. B. Newsom.

CANTON, O.—Union Metal Co. has been incorporated with $25,000 capital by C. A. Orr, H. R. Jones and R. V. Mitchell.

CINCINNATI—Cincinnati Artistic Wrought Iron Works Co. has been incorporated with $100,000 capital by Raleigh V. Lipe, Robert

Iron and Manganese Ores and Minerals

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old Range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 53 to 63 per cent	9.00 to 10.50
Copper free low phosphorus 53 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, f.o.b. cars Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	11.00 to 12.00
Algerian low phosphorus, 52 to 54 per cent	10.00 to 10.50
Riff low phosphorus, 65 to 66 per cent	9.50 to 10.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 66 to 68 per cent	10.00
Spanish foundry or basic, 50 to 54 per cent	8.50 to 9.50
Algerian foundry and basic, 50 to 54 per cent	9.25 to 9.75

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent.....nominal
Indian minimum 47 per cent.....nominal
Caucasian, 53 to 55 per cent.....
Washed, 42 cents c.i.f. tidewater

Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$17.50 to 18.00
Washed gravel, imported duty paid eastern tidewater, per net tons	17.00 to 18.00

Hopper, Matthew P. Bedel, and Albert D. Fisher.

CLEVELAND—Lindsay Wire Weaving Co., 14025 Aspinwall avenue, will build a 2-story addition 50 x 165 feet.

CLEVELAND—Electric Ventilating Heater Co. has been incorporated with $10,000 capital by J. A. Brune, George R. Sizer, Wade McConnell, Jacob H. Schoen and Harry Hoffman.

DAYTON, O.—Kuhns Bros. have let general contract to Shook & Billiter, 810 Schwind building, for a 1-story foundry addition 70 x 200 feet.

ELYRIA, O.—T. & M. Tool Co. has been incorporated with $50,000 capital by Scott Hinman, M. L. Hinman, Carl Taylor, A. E. Taylor and S. R. Taylor.

YOUNGSTOWN, O.—Improved Rail Co. has been incorporated with $500 capital by G. F. Hammond, Pauline Feibus, R. R. Stephenson, Beatrice Arnold and W. Carlton Young.

BARTLESVILLE, OKLA.—Empire Gasoline Co., E. L. Peck general superintendent, contemplates erection of a gasoline plant on the properties of the Indian Territory-Illinois Oil Co., a subsidiary of the Empire organization, in oil field near Seminole, Okla. Low pressure absorption equipment will probably be used.

BARTLESVILLE, OKLA.—Phillips Petroleum Co. has started 25 wells on newly acquired property in Burbank oil field and will spend about $1,500,000 in present development of seven 160-acre tracts. All drilling equipment has been purchased but a large amount of pumping equipment will be needed later. Expansion of gasoline plants is also contemplated. A. C. Branson is purchasing agent.

EL RENO, OKLA.—Oklahoma Road Machinery Co. has been incorporated with $10,000 capital by C. L. McHenry and A. D. Boyd.

OKLAHOMA CITY, OKLA.—Road Equipment Co., capital $100,000, incorporated by T. E. Ward, 330 East Thirteenth street, C. S. Beekman and Bert Brooks to deal in road machinery.

TULSA, OKLA.—Mid-Continent Petroleum Corp. has awarded contract to Southwestern Engineering Co. for two 2000-gallon capacity portable gasoline plant units.

TULSA, OKLA.—Roxana Petroleum Corp. has awarded contract to Ryan Motor Co., local Ford Motor Co. representative, for five complete Fordson tractor core drilling units.

TULSA, OKLA.—Walter O'Bannon Co., manufacturer and dealer in oil field specialties, has moved to new building containing 5000 square feet of floor space at Fourth and Frankfort streets.

TULSA, OKLA.—National Tank Co., Jay Walker, president, has acquired a 2-acre site on Sand Springs road and will erect a fabricating plant, 50 x 100 feet, and a warehouse, 60 x 100 feet, for manufacture of wooden and steel tanks. Steel and erecting contract was awarded the Braden Co.

TULSA, OKLA.—Sinclair Pipe Line Co. is starting construction of a short 4-inch oil pipe line from the Pampa field in Texas panhandle to the railroad whence oil will be moved by tank car. Should field prove large enough, company plans an 8-inch pipe line from that region to connection with main system at Devol, Okla. J. R. Manion, Sinclair building, is president and J. F. Blake is general superintendent.

ERIE, PA.—Lake Erie Welding & Spring Co. has bought a site and will build an addition to its plant to house a machine shop department.

ERIE, PA.—Hall-Will Inc., Pearl street and Wagner avenue, has been incorporated with $150,000 capital to manufacture pipe, bolt and nipple threading machines, dies, sinkers and other machinery by Leslie S. Hall, J. W. McLeod, H. P. Weller, C. F. Williams and William F. Bromley.

MCKEES ROCKS, PA.—Enterprise Stamping Co., Chambers street, will build a 2-story addition 120 x 275 feet.

MEADVILLE, PA.—Hookless Fastener Co., Cherry and Cottage streets, metal specialties, will build a 4-story plant 60 x 500 feet.

NEW CASTLE, PA.—Bright Bumper Mfg. Co. is being organized to manufacture automobile bumpers and will build a plant.

PHILADELPHIA—Edward Pausser will build a 2-story machine shop 46 x 100 feet. W. E. S. Dyer, Land Title building, is engineer.

PHILADELPHIA—The Terminal Warehouse Co. has awarded a contract through the Turner Construction Co., general contractor, for reinforcing bars for a warehouse addition.

PHILADELPHIA—Bids have been closed by John M. Driver, Inc., Lancaster near Fifty-seventh street, on a factory building. Stetler & Deysher are architects in charge.

PHILADELPHIA—Bids were closed April 5 by the John M. Driver Co., Fifty-seventh and Lancaster streets on a factory. Stetler & Deysher are architects.

PHILADELPHIA—Bids are being opened by the department of public works on a $500,000 pumping station at Wheatsheaf lane and Richmond street, brick and concrete, 1-story, 60 x 140 feet.

PHILADELPHIA—R. & B. Auto Radiator & Body Co., 1429 Fairmount avenue, will build a 1-story machine shop and metal-working shop. General contract to National Construction Co., 26 South Fifteeth street.

PHILADELHIA—Monarch Mfg. Works, Westmoreland and Salmon streets, machine shop, will build an addition and remodel part of its present plant. Webber & Wurster, 1530 Locust street, are architects.

PHILADELPHIA—Bids are being asked by the Philadelphia Storage Battery Co., C and Ontario streets, for a $150,000 factory building, brick and reinforced concrete, three stories high, 55 x 250 feet.

PHILADELPHIA—The Monarch Mfg. Co. Salmon and Westmoreland, closed general contractors bids April 1 on alterations and additions to its machine shop. Webber & Wurster are architects in charge.

PHILADELPHIA—Contract has been awarded by the Terminal Warehouse Co., Delaware avenue and Poplar street, to the Turner Construction Co., 1713 Sansom street, for a $300,000 warehouse, eight stories with 195 feet frontage.

PAWTUCKET, R. I.—Davis-Jones Insulated Wire Co., D. S. Davis president, is building a 2-story plant.

PHILLIPSDALE, R. I.—Washburn Wire Co. is considering plans for development of a power project to furnish power to its mills.

CHATTANOOGA, TENN.—Chattanooga Implement Mfg. Co., East Hemlock street, will build two 1-story additions each 55 x 170 feet.

CHATTANOOGA, TENN.—Samuel Stamping & Enameling Co. has been incorporated with $100,000 capital by S. S. Price, 646 Vine street, and associates. Plans to build plant.

NASHVILLE, TENN.—Federal Can Co., 500 Benton avenue, is building a 1-story addition to its plant.

AUSTIN, TEX.—Disbursing Officer, Camp Mabry, Texas National Guard, is receiving bids until April 22 for machinery and equipment for construction of modern rifle range at Palacios, Texas, camp.

BRECKENRIDGE, TEX.—Brown Tool Co., capital $75,000, chartered by Charles Brown, Clyde M. Neal and C. E. Thomas to manufacture oil field drilling tools.

CISCO, TEX.—Black Steel & Wire Co. has completed 2-story warehouse, 32 x 80 feet. J. M. Gruber is district manager.

CLEBURNE, TEX.—Gulf, Colorado & Santa Fe railroad, 408 Union Depot building, Galveston, is building a blacksmith shop 122 x

Iron and Steel Production

IN GROSS TONS

Pig Iron

Compiled by IRON TRADE REVIEW

	—Stacks— No.	In	—Output— Total	Av. daily	—Stacks— No.	In	—Output— Total	Av. daily	—Stacks— No.	In	—Output— Total	Av. daily	—Stacks— No.	In	—Output— Total	Av. daily
			1907				1908				1909				1910	
January	376	311	2,174,801	70,155	398	139	1,081,813	34,897	406	234	1,787,478	57,683	416	311	2,599,995	83,871
February	374	308	2,047,036	73,108	401	150	1,086,809	37,476	407	233	1,682,470	60,088	417	311	2,429,525	86,768
March	377	304	2,186,709	70,539	398	154	1,229,856	39,672	406	229	1,822,024	58,793	417	310	2,588,736	83,508
April	378	327	2,226,768	74,223	398	146	1,155,122	38,504	406	224	1,731,406	57,687	418	291	2,477,700	82,590
May	391	329	2,291,069	73,904	396	145	1,168,002	37,677	407	236	1,866,757	60,218	419	279	2,374,802	76,607
June	392	341	2,237,420	74,580	395	154	1,106,300	36,876	408	240	1,929,929	64,384	420	271	2,288,279	76,276
July	396	335	2,253,243	72,685	397	166	1,228,604	39,632	409	258	2,088,620	67,375	420	254	2,158,124	69,617
August	397	329	2,243,656	72,376	399	181	1,366,019	44,065	412	278	2,232,642	72,021	422	244	2,108,791	67,864
September	399	329	2,174,148	72,471	399	189	1,416,252	47,208	413	297	2,378,655	79,201	420	234	2,048,461	68,282
October	401	314	2,359,690	76,119	400	200	1,573,824	50,764	413	309	2,589,681	83,538	421	230	2,086,205	67,297
November	398	236	1,820,558	60,685	402	212	1,582,314	52,744	414	311	2,532,740	84,425	421	218	1,910,385	63,679
December	398	154	1,234,732	39,830	403	221	1,723,664	55,602	416	314	2,682,702	86,539	421	193	1,779,899	57,416
Total			25,249,732	*69,177			15,718,579	*42,947			25,325,090	*69,383			26,845,902	*73,550
			1911				1912				1913				1914	
January	421	210	1,766,558	56,985	421	227	2,052,806	66,220	423	297	2,787,800	89,929	423	199	1,879,886	60,624
February	421	226	1,781,285	63,617	422	235	2,098,796	72,372	423	306	2,578,670	92,095	423	219	1,888,607	67,450
March	421	236	2,165,764	69,863	420	237	2,411,529	77,791	423	278	2,762,523	89,123	423	232	2,341,551	75,534
April	421	220	2,044,904	68,163	421	239	2,377,621	79,254	421	297	2,754,358	91,812	422	212	2,261,501	75,383
May	421	206	1,871,388	60,367	423	243	2,508,341	80,753	421	285	2,816,525	90,865	422	198	2,097,019	67,646
June	421	202	1,773,282	59,109	424	242	2,433,737	81,125	422	283	2,616,883	87,229	422	193	1,904,566	63,486
July	423	196	1,776,108	57,294	422	245	2,402,567	77,502	422	264	2,558,276	82,525	422	187	1,955,324	63,075
August	423	206	1,921,832	61,995	423	255	2,500,163	80,650	424	260	2,537,018	81,839	422	187	1,996,488	64,403
September	423	216	1,978,918	65,797	419	262	2,444,454	81,482	425	258	2,494,098	83,137	422	180	1,882,718	62,757
October	421	214	2,092,061	67,486	422	260	2,683,645	86,569	425	244	2,539,924	81,933	422	162	1,767,227	57,007
November	421	214	1,999,100	66,637	423	289	2,639,562	87,985	424	225	2,229,960	74,322	421	150	1,501,269	50,042
December	422	215	2,032,301	65,558	423	291	2,777,292	89,590	424	191	1,976,138	63,746	421	154	1,495,325	48,236
Total			23,198,601	*63,558			29,825,513	*80,124			30,652,767	*83,980			22,970,926	*62,934
			1915				1916				1917				1918	
January	421	165	1,591,024	51,323	421	304	3,171,878	102,319	422	316	3,159,339	101,930	435	294	2,403,227	77,523
February	421	179	1,666,592	59,521	421	312	3,078,546	106,157	422	317	2,649,935	94,641	435	319	2,318,242	82,723
March	421	190	2,046,280	66,009	422	315	3,327,630	107,343	423	331	3,255,513	105,026	438	338	3,209,996	103,548
April	421	197	2,114,518	70,484	422	320	3,225,496	107,517	425	333	3,328,061	110,936	437	351	3,273,355	109,112
May	421	207	2,255,157	72,747	423	321	3,364,584	108,535	425	340	3,413,677	110,119	437	360	3,451,884	111,351
June	421	221	2,369,932	78,998	423	325	3,213,818	107,127	427	347	3,260,234	108,675	437	353	3,316,148	110,538
July	421	234	2,563,311	82,687	419	316	3,221,127	103,907	429	351	3,337,442	107,659	437	364	3,408,584	109,954
August	421	246	2,774,325	89,510	419	317	3,197,338	103,156	431	357	3,238,970	104,483	439	371	3,378,479	108,983
September	420	266	2,834,342	94,478	419	326	3,208,041	106,935	431	342	3,140,742	104,691	438	364	3,413,223	113,774
October	420	276	3,120,340	100,656	419	328	3,508,180	113,167	433	354	3,296,286	106,332	437	364	3,482,392	112,335
November	421	285	3,035,235	101,174	420	322	3,317,805	110,593	434	344	3,198,597	106,620	437	360	3,347,844	111,595
December	421	295	3,201,605	103,278	422	309	3,184,178	102,715	435	321	2,885,380	93,077	435	351	3,434,114	110,778
Total			29,573,161	*81,022			39,019,123	*106,609			38,164,976	*104,561			38,437,488	*105,308
			1919				1920				1921				1922	
January	435	330	3,306,279	106,654	432	285	3,012,373	97,172	436	184	2,414,753	77,895	430	127	1,645,804	53,090
February	435	311	2,942,347	105,120	432	305	2,984,257	102,904	436	155	1,929,394	68,906	429	139	1,630,180	58,220
March	435	279	3,088,023	99,614	433	315	3,375,768	108,895	436	103	1,594,866	51,447	429	155	2,035,903	65,674
April	435	216	2,474,374	82,479	433	278	2,752,670	91,754	436	96	1,190,751	39,691	429	161	2,070,161	69,005
May	433	197	2,107,729	67,991	433	297	2,991,825	96,510	436	90	1,215,272	39,202	427	175	2,309,348	74,495
June	433	199	2,114,028	70,467	433	302	3,046,623	101,553	436	74	1,064,007	35,466	427	191	2,362,455	78,748
July	434	240	2,424,212	78,206	434	291	3,043,918	98,190	435	69	864,642	27,892	427	170	2,403,030	77,517
August	432	266	2,742,081	88,453	434	306	3,145,536	101,468	436	69	954,901	30,802	427	148	1,810,565	58,408
September	433	163	2,480,790	82,692	434	317	3,124,308	104,143	435	84	985,795	32,859	427	189	2,024,008	67,466
October	432	216	1,864,424	60,142	435	290	3,288,341	106,075	435	95	1,234,450	39,821	428	218	2,629,655	84,827
November	432	252	2,407,369	80,244	435	255	2,935,081	97,836	429	120	1,414,958	47,165	428	241	2,846,110	94,870
December	432	262	2,626,074	84,711	435	202	2,700,268	87,105	429	123	1,642,775	52,992	428	253	3,083,520	99,468
Total			30,578,730	*83,777			36,400,968	*99,456			16,506,564	*45,228			26,850,844	*73,566
			1923				1924				1925				1926	
January	428	261	3,228,226	104,136	414	248	3,015,480	97,273	411	251	3,372,207	108,781	385	225	3,319,789	107,089
February	424	278	2,993,918	106,925	414	263	3,073,619	105,987	411	256	3,214,067	114,788	382	223	2,923,850	104,423
March	424	295	3,522,595	113,664	410	280	3,465,389	111,787	410	246	3,571,422	115,207	377	235	3,458,171	111,554
April	423	311	3,546,308	118,210	410	234	3,226,107	107,537	409	221	3,211,235	107,041				
May	423	322	3,868,486	124,790	411	187	2,619,986	84,515	405	196	2,933,907	94,642				
June	424	322	3,667,868	122,262	411	158	2,022,836	67,427	399	191	2,679,045	89,301				
July	418	299	3,684,677	118,860	411	145	1,783,457	57,531	396	188	2,665,262	85,976				
August	418	270	3,448,886	111,254	411	150	1,882,986	60,741	391	192	2,707,171	87,328				
September	418	254	3,117,526	103,917	411	174	2,053,617	68,454	387	200	2,725,885	90,862				
October	418	245	3,142,642	101,375	411	204	2,514,979	83,832	386	209	3,017,889	97,351				
November	418	229	2,891,191	96,373	411	229	2,956,389	95,367	385	220	3,023,257	100,775				
December	418	231	2,912,527	93,952	411	229	2,956,389	95,367	385	234	3,249,057	104,808				
Total			40,025,850	*109,659			31,076,572	*84,908			36,370,404	*99,645			9,701,801	*107,798

Steel Ingots

Compiled by American Iron and Steel Institute

	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. daily	Total	Av. Daily
	1922		1923		1924		1925		1926	
January	1,891,857	72,764	3,841,095	142,263	3,649,913	135,182	4,198,564	155,502	4,153,545	159,752
February	2,071,772	86,324	3,471,843	144,660	3,826,246	153,050	3,756,243	156,510	3,804,594	158,525
March	2,814,667	104,247	4,066,680	150,618	4,206,699	161,796	4,198,520	161,482	4,491,689	166,359
April	2,902,240	116,090	3,963,736	158,549	3,845,466	128,787	3,587,524	137,982	.....	.....
May	3,218,794	119,215	4,216,355	156,161	2,640,034	97,779	3,458,253	133,010	.....	.....
June	3,127,775	120,299	3,767,256	144,894	2,065,676	82,627	3,207,056	123,348	.....	.....
July	2,952,806	118,112	3,531,458	141,258	1,877,789	72,223	3,087,590	118,753	.....	.....
August	2,629,256	97,380	3,695,788	136,881	2,552,891	98,188	3,424,034	131,694	.....	.....
September	2,818,261	108,395	3,356,776	134,271	2,827,625	108,755	3,492,904	134,342	.....	.....
October	3,410,265	131,164	3,577,091	132,485	3,125,418	115,756	3,893,028	144,186	.....	.....
November	3,430,309	131,935	3,134,321	120,551	3,121,149	124,846	3,907,437	156,297	.....	.....
December	3,300,416	132,017	2,863,266	114,531	3,569,251	137,279	3,975,824	152,916	.....	.....
Total	34,568,418	*111,511	43,485,665	*139,825	36,811,157	*117,984	44,186,977	142,080	12,449,828	*161,686

*Average.

Where Speed and Power Rule

Years of satisfactory service from their old Brownhoist convinced Chrysler engineers that Brownhoist is building the same speed and power into locomotive cranes as they build into their automobiles.

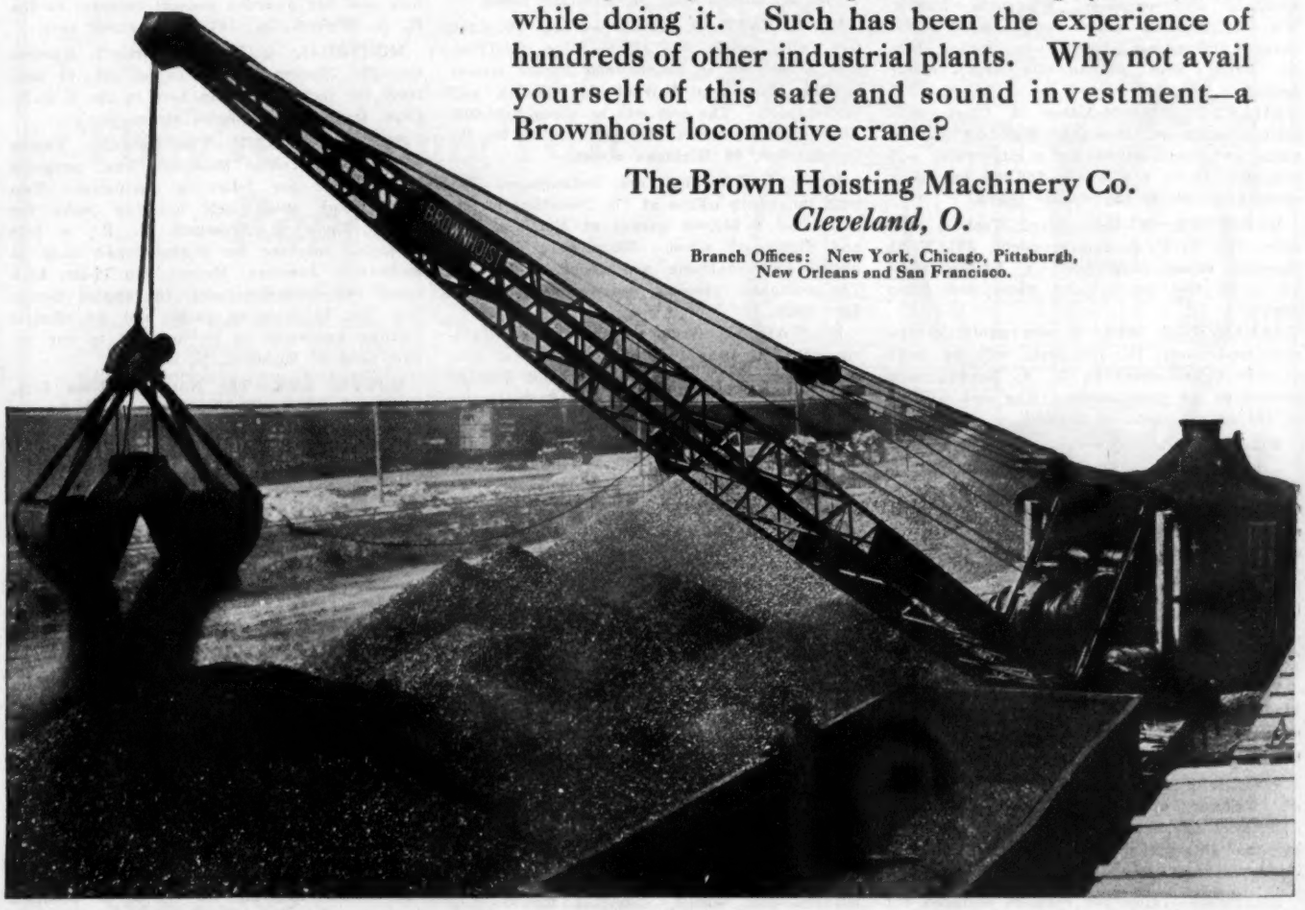
Brownhoist builds both large and small cranes, with creeper or railway truck mountings. We shall be glad to help you solve your handling problem.

Today, Chrysler with a typical industrial plant layout uses a modern Brownhoist 8-wheel steam locomotive crane to unload coal to storage, to load turnings and punchings with magnet and to switch cars in and out of their Jefferson St. yard in Detroit.

You too can select a Brownhoist crane of the proper size and mounting that will cover your yard, solve your particular problem and pay for itself while doing it. Such has been the experience of hundreds of other industrial plants. Why not avail yourself of this safe and sound investment—a Brownhoist locomotive crane?

The Brown Hoisting Machinery Co.
Cleveland, O.

Branch Offices: New York, Chicago, Pittsburgh, New Orleans and San Francisco.



BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

517 feet and a flue shop 45 x 228 feet.

DALLAS, TEX.—Hinckley & Sons, capital $10,000, incorporated by H. McDonald Hinckley, D. T. Hinckley and C. J. Hinckley to deal in steel products.

DALLAS, TEX.—Magnolia Petroleum Co. purchase of Killiam Oil properties in Laredo field for about $1,250,000 will mean considerable expansion of pipe line, steel tankage and drilling activity in that section. E. R. Folmar, Magnolia building, is purchasing agent.

HOUSTON, TEX.—Humble Pipe Line Co. has started looping of 150-mile line from Comyu Station to Big Lake oil field with another 8-inch line which will increase daily capacity to 30,000 barrels. J. A. Neatch, Humble building, is general superintendent in charge.

PORT ARTHUR, TEX.—Standard Brass Mfg. Co., capital $75,000, incorporated by R. M. Pyron, G. H. Petkovsch and D. E. Boykin.

BELLOWS FALLS, VT.—New England Power Co. has bought a site and will build a 45,000-horsepower hydroelectric plant.

AUBURNDALE, WIS.—A. F. Billmeyer, architect and engineer, Wisconsin Rapids, Wis., is drawing plans for a new public garage and repair shop to be erected here by Kring Bros., automobile and tractor dealers.

GILLETT, WIS.—McMahon & Clark, consulting engineers, Menasha, Wis. are making plans and specifications for a city water and sewerage plant for which $80,000 has been made available to the village board.

HARTFORD, WIS.—Hartford Tool & Machine Co., F. F. Jordan president, 237 North Summer street, will build a 1-story plant 50 x 90 feet preliminary plans are being drawn.

JANESVILLE, WIS.—A new public garage and repairshop, 75 x 136 feet, will be built at 6-10 Court street by A. A. Russell, now located at 7-9 Court street. The cost will be in the neighborhood of $50,000.

MILLTOWN, WIS.—Fame Pea Canning Co. has awarded general contract to William Nyman, Cumberland, for canning factory, 60 x 90, at cost of $135,000. R. S. Hanson is manager.

MILWAUKEE—Sam Hersh, 1034 Grant boulevard, has taken the general contract to build a new office, warehouse and shop building, 2-story, 50 x 150 feet, for the American Mill Supply Co. at 1369 Thirty-first street.

MILWAUKEE—The Yeoman Bros. Co., Chicago is lowest bidder for furnishing the equipment of the new Mud Creek low level sewage booster station at North Milwaukee at $9560. This is part of the metropolitan sewerage project.

MILWAUKEE—Bids for the first unit of the new brass foundry of the Loeffelholz Co., 170 Clinton street, are being taken by Architect H. C. Haeuser, Colby-Abbot building. This work will cost $75,000, and the complete new plant will cost $200,000.

MILWAUKEE—E. A. Amheuser, principal owner of the M. J. Skubal Co., operating a large welding plant at 149 Clinton street, has placed contracts for the erection of a complete new plant at 717 South Pierce street, to be 67 x 90 feet, and cost about $35,000.

MILWAUKEE — Milwaukee Journal Co., Leonard M. Bowyer manager, will build a garage and service building 150 x 150 feet with machine shop, for service and storage for its trucks and cars. General contract to W. W. Oeflein Inc., 86 Michigan street.

MILWAUKEE—A private garage, 150 x 160 feet, with repair and service shop facilities, will be erected at Fourth and Poplar streets by the Milwaukee Journal Co., Fourth and State streets. The cost will be about $100,000. The general contract has been let to W. W. Oeflein, Inc. 86 Michigan street.

MILWAUKEE—The Fred Boddenhagen Co., with temporary offices at 778 Twentieth street, will build a $60,000 garage at North avenue and Eighteenth street. Plans have been accepted and contracts are about to be let. The company recently was appointed Star distributor.

MILWAUKEE—Architects Leenhouts & Guthrie, 424 Jefferson street, let the general contract for building a $200,000 cold storage warehouse at South Water and Park streets here to Walter W. Oeflein Inc., 86 Michigan street. The owner is the Milwaukee Storage Co., a new concern headed by Bernard Shuman, 10 North Clark street, Chicago.

OWEN, WIS.—The village board has engaged the engineering firm of McMahon & Clark, of Menasha, Wis. to plan and supervise the construction of a water works and sewage plant which will cost about $75,000.

PLATTEVILLE, WIS.—Architect Henry Kleinhammer has completed plans and is taking bids for a machine shop, 40 x 110 feet, and an office building, 20 x 30 feet, for Frank Russell.

Business in Canada

LONDON, ONT.—The public utilities commission is having plans prepared by engineer, E. V. Buchanan, Hydro building, for addition to substation and installation of additional equipment.

SAULT STE. MARIE, ONT.—The Spanish River Pulp & Paper Mills Co. Ltd., Huron street, proposes to build a coal pressing plant here at a cost of $100,000.

ST. THOMAS, ONT.—The Canada Iron Foundries, 1000 Talbot street, will start work immediately on addition to its plant here. E. P. Cash, Catharine street, has been awarded general contract. Equipment will be purchased later.

TORONTO, ONT.—The Central Casket Co. Ltd., 1515 Davenport road, will build factory here and has awarded general contract to the H. A. Wickett Co., 127 Front street east.

MONTREAL, QUE.—The Northern Electric Co., 121 Shearer street, has let general contract for factory addition here to the E. G. M. Cape & Co., 10 Cathcart street.

MONTREAL, QUE.—The Canadian Pacific railway, head office Montreal, Que., proposes to purchase the following equipment: Two 50-ton high speed, self lowering jacks for engine house at Arrostock N. B.; a bolt threading machine for engine repair shop at Brownville Junction, Maine; two 75-ton high speed self lowering jacks, for engine house; two No. 19 lowering jacks and an electric welding generator to be installed in car repair shop at McAdam, N. B.

ROUYN, QUE.—The Noranda Mines Ltd., Keefer building, Montreal, Que., is having plans prepared by A. E. Wheeler, 25 Broadway, New York, for a $3,000,000 smelter to be erected here.

SHAWINIGAN FALLS, QUE.—The Shawinigan Water & Power Co. proposes to have plans prepared for new power plant to be erected here.

New Trade Publications

PUMPS—Centrifugal pumps for various kinds of service are shown in a pamphlet issued by the Pennsylvania Pump & Compressor Co., Easton, Pa.

WELDING AND CUTTING—Various kinds of welding and cutting equipment and accessories are shown in a catalog distributed by the International Oxygen Co., Newark, N. J.

REAMERS—Taper pin reamers designed for fast work and free action are featured in a leaflet by the Morse Twist Drill & Machine Co., New Bedford, Mass. A table of specifications and prices is included.

STEEL SASH—Continuous sash for the modern well-lighted shop is described in the catalog published by David Lupton's Sons Co., Philadelphia. Methods of manufacture, types and roof design also are shown.

AIR COMPRESSORS—Pennsylvania Pump & Compressor Co., Easton, Pa., has issued a bulletin covering its direct-connected synchronous motor-driven air compressors. Construction and operation of these compressors and advantages obtained by this form of connection are described.

TRANSPORTATION—A discussion of man power and mechanical means of moving materials through the shop, is contained in a booklet issued by the Clark Tructractor Co., Buchanan, Mich.

WELDING AND CUTTING EQUIPMENT—International Oxygen Co., Newark, N. J., in a bulletin just issued, describes its welding and cutting equipment for various uses, with price list of the various appliances.

VENTURA FAN—A bulletin by the American Blower Co., Detroit, illustrates and describes a reversible fan for use in kitchens and other places where rapid ventilation is desired.

HEATING EQUIPMENT—Gorton & Lidgerwood Co., New York, manufacturer of heating equipment, has issued a catalog covering its vapor heating equipment, with description of its operation and some account of working installations.

STEEL POLES—Equipment for carrying electric power wires, for strength and durability, is described in a bulletin by the Truscon Steel Co., Youngstown, O. It covers poles, cross arms and hardware for various attachments, with views of installations.

CONCRETE ADMIXTURE—Celite Products Co., New York, has issued a bulletin giving specifications for diatomaceous silica as an admixture in concrete, with typical specification clauses covering the use of its products in concrete, with directions for its use.

SCLEROSCOPE—Shore Instrument & Mfg. Co., Jamaica, N. Y., presents a full description of the construction and operation of its direct-reading scleroscope, with discussion of the advantages of this type of testing equipment.

INDUSTRIAL LOCOMOTIVES—General Electric Co., Schenectady, N. Y., has prepared a bulletin covering its storage battery type of 60-ton industrial haulage locomotive, with specifications and chart of tractive effort for various speeds. Ease of operation and economy are claimed for this type of traction unit.

They're Coming To It *Rapidly!*

Roofs of vitreous Enameled Sheet Steel in the form of mission tile, flat shingles, etc., are fast becoming more and more popular all over the land. They insure fire safety, complete and permanent weather protection and long life. Besides, they are exceedingly economical in first cost and maintenance — and add the finishing touch to the exterior beauty of the home.

Throughout the house, the use of Sheet Steel is becoming more widespread. Finished in vitreous enamel it makes an ideal wall paneling for bathroom or kitchen use. The wall can easily be kept clean and shining by simply wiping it off with a damp cloth. Sheets for use as a vitreous enameling base must have very exacting properties—a reason why manufacturers have accepted Mansfield "Wabik Metal" sheets as standard for this class of work. Scientific control by competent metallurgists results in a metal of just the right porosity to provide a permanent, unyielding grip for the enamel surface. Furthermore, "Wabik Metal" is guaranteed against warping or fracturing.

MASTER TEC BRAND

"Wabik Metal" Sheets are also used extensively for *Stove Door Panels, Splasher Backs Boiler Pans, Table Tops, Refrigerator Linings, Signs and all other flat work that require attractive and durable Vitreous Enameling.*

WABIK METAL

"The Base for Distinctive Enameling"

Mansfield Sheet & Tin Plate Company

Mansfield, Ohio

District Sales Offices:

12-237 General Motors Bldg., Detroit, Mich.
1372 Wrigley Bldg., Chicago, Ill.
410 Pierce Bldg., St. Louis, Mo.
1106 National City Bldg., New York, N. Y.
2002 Union Trust Bldg., Cleveland, Ohio
1504 West Venango Street, Philadelphia, Pa.

Contributing Member

SHEET STEEL TRADE EXTENSION COMMITTEE

District Sales Offices:

1403 Merchants Bank Bldg., Indianapolis, Ind.
1020 Union Trust Bldg., Cincinnati, Ohio
640 Endicott Bldg., St. Paul, Minn.
237 Rialto Bldg., San Francisco, Calif.
509 Wilcox Bldg., Los Angeles, Calif.
1426 L. C. Smith Bldg., Seattle, Wash.

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount or $4 per ton higher net.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis or $5 per ton higher net.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	46	42½
¾-inch	60	48½
1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	60	48½

Lap Weld

2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½

Lap Weld

2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	42	12½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½

Lap Weld

2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	83	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 6-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

⅛ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14

Lap Weld

2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
8 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
½-inch	+28	+40
1-inch	+34	+40
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½ inches	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh less carload discounts. Carload 4 points larger

STEEL (Lap Welded)

2 and 2¼-inch	23 off
2½ and 2¾-inch	33 off
3-inch	36 off
4¼ to 3¾-inch	38½ off
4 to 13-inch	42 off

(Note—Additional discounts of 5 to 7 extra 5 per cents now being given.)

CHARCOAL IRON

1½-inch	+22
1¾-inch	+12
2 and 2¼-inch	+ 2
2½ to 3-inch	3
3¾ to 4½-inch	5

(Note—Additional discounts of 2 or 3 extra 5 per cents now being given.)

SEAMLESS COLD DRAWN

1-inch	56 off
1¼ and 1½-inch	48 off
1¾-inch	32 off
2 and 2¼-inch	27 off
2½ and 2¾-inch	35 off
3-inch	41 off
3¼ and 3½-inch	43 off
4-inch	46 off
4½, 5 and 6-inch	41 off

SEAMLESS HOT ROLLED

2 and 2½-inch	30 off
2½ and 2¾-inch	38 off
3-inch	44 off
3¼ and 3½-inch	46 off
4-inch	49 off
4½, 5 and 6-inch	44 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.20 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates, Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates not Exceeding 72 inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 10.2 pounds per square foot to and including 7.65 pounds per square foot	.20c

Plates over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot	.20c
Plates ordered 7.65 pounds per square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull material subject to U. S. Navy Dept. Specifications for Medium or Soft Steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. Specifications, classes A and B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates	1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet....No extras

Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra	.10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared wiht re-entrant angles)

Additional extra	.20c

Sivyer Castings can be forged and welded

SIVYER S CASTINGS

DEPENDABLE

An oil refinery junction box casting—cast in Sivyer Electric Steel

Defeating Breakage and Leakage—with Interior Soundness

For those parts that must withstand extreme pressures and strains, manufacturers are logically turning to Sivyer Electric Steels. The junction-box casting shown above is such a part. In service it is called upon to withstand severe hydraulic pressures—that can range as high as 2000 pounds. To defeat leakage and breakage under such terrific pressures calls for an exceptional interior soundness. The metal must be non-porous and it must be free from those hidden defects that cause failure under strain. Sharply varying and complicated metal sections add to the difficulties of providing close-grained, "shrink-free" castings. Where casting demands are so rigid, manufacturers naturally turn to Sivyer, as was done in this case. Careful foundry practice, plus the close-grained, non-porous texture of Sivyer Steel provides assurance against breakage and leakage in service. The user of the junction box illustrated says this of the 337 castings Sivyer has shipped him: "Up to the present time we have not found a single leak in testing any of the castings."

Sivyer is often given the responsibility of casting new and untried parts and of developing new methods to eliminate trouble on old parts. Many parts formerly made in other metals and by other methods have been replaced by Sivyer Steels — at a decided advantage to the casting user.

If you are having trouble with parts failing in service — with high rejections — excessive machining, or if you are developing new and untried parts — Sivyer Electric Steels and Sivyer methods may furnish the solution for your problem. We will gladly make recommendations on any part without obligating you. Merely SEND BLUE PRINTS.

SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE

"Where-To-Buy"

A classified-by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertiser and by referring to advertisement you can get full particulars about products.

ACCUMULATORS
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Pennsylvania Engineering Works, New Castle, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

ACETYLENE (Dissolved)
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACETYLENE GENERATORS
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

ACETYLENE IN CYLINDERS
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

ACIDS (Pickling)
American Chemical Paint Co., Ambler, Pa.

ADAMITE ROLLS
American Adamite Co., The, 12th & Etna Sts., Pittsburgh, Pa.

AIR COMPRESSORS—See COMPRESSORS (Air)

ALLOYS
Browne, deCourcy, Inc., 8 West 40th St., New York City.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM
Leavitt, C. W., & Co., 30 Church St., New York City.
Rogers, Brown & Crocker Bros., Inc., 21 E. 40th St., New York City.

ALUMINUM (Vanadium)
Vanadium Corp. of America, 120 Broadway, New York City.

ALUMINUM TUBING
Summerill Tubing Co., Bridgeport, Pa.

ANGLES, TEES, CHANNELS—See STEEL (Structural)

ANNEALING BOXES
Adamson Machine Co., The, Akron, Ohio.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Pittsburgh Malleable Iron Co., 34th & Smallman Sts., Pittsburgh, Pa.
Riter-Conley Co., Oliver Bldg., Pittsburgh, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa.
Zanesville Malleable Co., Zanesville, Ohio.

ANTI GLARE PREPARATION
Skybryte Co., The, Keith Bldg., Cleveland, O.

APPRAISALS
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

AXLES
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., The 3675 E. 78th St., Cleveland, Ohio.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
National Tube Co., Frick Bldg., Pittsburgh, Pa.

BALING PRESSES
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

BANDS AND HOOPS (Galvanized Strips)
Sharon Steel Hoop Co., Sharon, Pa.

BANDS (Iron)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BANDS (Welded Iron and Steel)
Akron-Selle Co., Akron, O.

BAR BENDERS
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

BARGES (Steel)
American Bridge Co., 71 Broadway, New York City.

BARRELS (Steel)
Cleveland Wire Spring Co., The, 1281 E. 38th St., Cleveland, O.

BARS (Acid Resistant)
Alcumite Corp., The, Dayton, O.

BARS (Alloy)
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Wheelock, Lovejoy & Co., Inc., 128 Sidney St., Cambridge, Mass.

BARS (Concrete Reinforcements)
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Gulf States Steel Co., Brown-Marx Bldg., Birmingham, Ala.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Truscon Steel Co., Youngstown, O.

BARS (Iron and Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Milton Mfg. Co., The, Milton, Pa.
Morris, Wheeler & Co., 30th and Locust Sts., Philadelphia, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Republic Iron & Steel Co., Youngstown, O.
Truscon Steel Co., Youngstown, O.

BARS (Steel)
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Steel Co., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Pacific Coast Steel Co., Rialto Bldg., San Francisco, Calif.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Youngstown Sheet & Tube Co., Youngstown, O.

BARS, STEEL (Electric Furnace)
Timken Roller Bearing Co., The, Canton, Ohio.

BASKETS (Wire)
Meyers, Fred J., Mfg. Co., The, Hamilton, O.

BEAMS, CHANNELS, ANGLES, ETC.
Bethlehem Steel Co., Bethlehem, Pa.
Blystone Mfg. Co., Ironton St., Cambridge Springs, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Snead Architectural Iron Works, Louisville, Ky.

BEARINGS (Ball)
Hoover Steel Ball Co., Ann Arbor, Mich.
New Departure Mfg. Co., The, Bristol, Conn.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Journal)
Hyatt Roller Bearing Co., Newark, N. J.
Keystone Bronze Co., 39th St., Pittsburgh, Pa.

BEARINGS (Motor)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

BEARINGS (Roller)
Hoover Steel Ball Co., Ann Arbor, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BEARINGS (Thrust)
Hoover Steel Ball Co., Ann Arbor, Mich.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

BELT CEMENT AND DRESSING (Leather)
Williams, I. B., & Sons, Dover, N. H.

BELT LACING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BELTING (Chain)
Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill.

BELTING (Leather)
Chicago Rawhide Mfg. Co., 1305 Elston Ave., Chicago, Ill.
Williams, I. B., & Sons, Dover, N. H.

BENCHES AND FRAMES (Drawing)
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., The, Cuyahoga Falls, O.

BENDING AND STRAIGHTENING MACHINES
Cleveland Punch & Shear Works Co., 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kane & Roach, Niagara and Shonnard Sts., Syracuse, N. Y.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton-Abramsen Engineering Co., Park Bldg., Pittsburgh, Pa.

BENZOL AND TOLUOL RECOVERY PLANTS
Koppers Co., The, Union Trust Bldg., Pittsburgh, Pa.

BILLETS (Forging)
Bethlehem Steel Co., Bethlehem, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

BILLETS (Forging, Alloy Steel)
Bethlehem Steel Co., Bethlehem, Pa.

BILLETS AND BLOOMS
American Rolling Mill Co., Middletown, O.
American Tube & Stamping Co., The, Bridgeport, Conn.
Andrews Steel Co., Newport, Ky.
Bethlehem Steel Co., Bethlehem, Pa.
Central Steel Co., The, Massillon, Ohio.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
Wood, Alan, Iron & Steel Co., Widener Bldg., Philadelphia, Pa.

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